# Visual Electrodiagnostic Testing - Patient Information Sheet

# What is Visual Electrodiagnostic Testing?

Visual Electrodiagnostic Testing involves the recording of electrical signals that are produced by the eye and the brain in response to flashes of light or changing patterns. The recording of these electrical signals allow us to test whether different nerve cells and their connections in the eye and brain are working normally.

# How are the recordings made?

A clinician will take measurements of your head and make some (removable) marks on your skin with a pen. *If you have any skin allergies or if your skin is sensitive to cosmetics it would be helpful if you would notify the clinician beforehand.* He/she will then gently clean the skin at these marks and attach small (1 cm diameter) disc electrodes (see figure 1) at these points using a sticky paste. These discs may also be applied to your lower eyelid. Each disc is attached to a monitor which records the electrical signals



Figure 1 VEP electrodes

The testing will typically take 2 hours, after which the discs will be removed and your skin will be cleaned and you will be able to return to work or school. Some patients prefer to go home and wash their hair before returning to work.

It is very likely that we will have to put some drops into your eyes as part of the testing procedure. The drops (TROPICAMIDE 0.5% or 1.0%) are used to make the pupils larger than normal. The effects of these drops are temporary, they take about 15 to 30 minutes to work and your pupils should return to their normal size within 6-8 hours, although occasionally the effects may linger until the next day. The increase in your pupil size may mean that you will be more sensitive to bright lights during this period, especially if it is sunny. Therefore you may wish to bring sunglasses with you, particularly if you already have an increased sensitivity to light. The nature of the drugs may also mean that your near vision may be a little blurry, but again these effects are temporary. *It is recommended that driving should be avoided whilst your vision is affected.* 

As part of the testing procedure we will also ask you to sit in the dark for approximately 20 mins. This *dark adaptation* period enables the most sensitive nerve cells in the eye (the rods), to be tested. Smaller children may find this a little disconcerting but parents/guardians can remain in the testing room during this period.

**Please inform us if you would prefer not to have students observe the testing procedure.** The clinic is located within the *Bradford School of Optometry & Vision Science* which is responsible for the teaching and training of Optometrists (Opticians). Observing these electrodiagnostic testing procedures can be a useful part of their training. However, if you yourself or if you are the parent/guardian of child who might be unsettled by this please inform the clinician.

## What preparation is needed?

Please arrive for testing with clean hair, free from gel, hair spray etc. Any head lice must be treated.

If you wear any glasses or contact lenses please bring them with you. If you usually wear contact lenses you may have to remove them for part of the testing session so it would advisable to bring a storage case for them.

If you take any medicines or tablets you should continue to take them at the usual times. You may also eat normally beforehand.

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During Visual Electrodiagnostic Testing we will be recording some or all of the following:

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- 1. Visual Evoked Potentials (VEPs)
- 2. Electroretinograms (ERGs)
- 3. Electro-oculograms (EOGs)

# What are Visual Evoked Potentials (VEPs)?

VEPs are electrical signals that originate in the brain and occur in response to visual stimulation. The signals allow us to assess the nerve pathways that exist between the eye and the brain. The signals are recorded from small metal discs that will be placed on the surface of your scalp (see figure 2). During the recording of these signals you will be asked to look at the centre of a TV screen that has moving black and white patterns. We will test each of your eyes separately, with a cover over the eye that is not being tested. This is a painless procedure and there are no after effects.



Figure 2. VEP recording

# What are Electroretinograms (ERGs)?



Figure 3 Fig

> The recording thread along the lower eyelid can feel a little unusual. In the unlikely event that you find it uncomfortable, notify the clinician and it will be either adjusted or removed straight away. Very rarely, the front of your eye (the cornea) may be scratched causing irritation and watering of the eye after the test has finished. If this happens you should visit your family doctor.

If you suffer from epilepsy there is a small theoretical risk that the test may induce a seizure. No case has ever been reported, but <u>if</u> you do suffer from epilepsy you should let the clinician know before the start of the tests. During the testing procedure you will have to look at checkerboard patterns presented on a TV monitor and flashing lights presented in a bowllike instrument similar to that shown opposite in figure 4.



Figure 4 – viewing light stimuli for ERG recording

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#### What are Electro-oculograms (EOGs)?

EOGs measure electrical activity from the eye and can be used to assess the function of important structures within the eye. Usually, pairs of electrodes are placed to the left and right of the eye (see figure 5) and during the recording of these signals you will be asked to move your eyes to the right and left following a spot as it moves from side to side.



Figure 5 – EOG recording

### Will I get the results the same day?

No – the results need to be analysed afterwards and a full report will be sent to the ophthalmologist who referred you for the tests.

### **Accompanying Persons**

You are welcome to bring along an accompanying person to the appointment, someone, preferably over 18 years of age, who would be free to sit with you during the duration of the testing procedure. We would ask if it is possible, that you do not bring small children as accompanying persons.

For any patient under the age of 16 we ask that the parent/guardian/carer be present a matter of requirement. In the case of smaller children, we normally manage testing with parental support, ie the child sitting on parent's knees. You could bring their favourite book, toy or even DVD and between us, we can usually entertain them while the recording takes place. For children we have produced an explanatory video about the testing procedures that can be viewed on the following web site:

http://www.youtube.com/watch?v=l1WxLDTUKW0

## **Mobile Phones**

<u>Could you please switch off your mobiles during the recording session</u>, it is primarily because light from the screens can disrupt the dark adaptation process

If you have any other concerns or questions please contact to the clinician in advance of the appointment.

# How to get there.

### **On arrival**

The Visual Electrodiagnostic Clinic is located in the **Health & Well Being Centre** in the **Phoenix Building (South West)** in the **School of Optometry and Vision Science**. Enter the Phoenix Building through the main entrance (arrow) - this is just opposite <u>BOMBAY STORES</u> on *Shearbridge Road*. Follow the ramp down and the building entrance is about 50 yards down on the right. Enter the building and in the far right hand corner of the entrance hall <u>report to the Eye Clinic Reception Desk</u>. Prof McKeefry will then meet you and bring you to Electrodiagnostic Unit.

### **Car Parking**

Longside car park is accessed off Shearbridge Rd opposite Bombay Stores – (for satnav BD7 1SA). You may park in one of the numbered bays at the far end of the car park which are for *DHEZ Permit holders*. <u>Note the bay</u> <u>number</u> which the clinic receptionist will ask for when you report at the Eye Clinic Reception.

# **University Campus**



### By car

Bradford is connected to the national motorway network via the M62 and the M606.

Best routes into Bradford are:

- from the south, east or west of Bradford M62 and the M606
- from the north-west of Bradford A629/A650 via Skipton and Keighley
- from the north-east A1 or A19, and reach Bradford via the A59 and then the A658 south of Harrogate.

#### By train

Bradford Interchange and Forster Square stations have extensive rail links, though many involve changing at Leeds. The Interchange is where you will probably arrive. National Rail Enquiries - www.nationalrail.co.uk

To get to the university from the Travel Interchange/Forster Square

Walking takes about 15 minutes, though it is partly uphill.

From the Interchange, come down the hill, across the crossing and turn left in front of City Hall.

From Forster Square station, walk along past the "Fibres" sculpture out onto Cheapside, then along Market Street to City Hall. From there, walk in front of the fountain in Centenary Square. Cross the road and walk left towards the glass front of the Alhambra Theatre. Turn right up Great Horton Road just before the Alhambra Theatre. The University is about 300 metres up this hill, beyond the College.

## For further information contact:

Professor Declan McKeefry Bradford School of Optometry & Vision Science University of Bradford W.Yorkshire BD7 1DP **Email:** <u>d.mckeefry@bradford.ac.uk</u> Tel : 01274 234648 <u>Postal Address:</u> University of Bradford Richmond Road Bradford

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#### **Complaints Procedure**

The University of Bradford is committed to providing the best possible service to customers and we welcome your comments - either positive or negative. If you are dissatisfied about the standard of service or lack of action by the University, please tell us. Your comment will then be handled in accordance with our complaint handling procedures. Complaints can be made in writing to: *Prof Alistair Goldman, Dean of the School of Life Sciences, University of Bradford.* 

Further details can be obtained from: <u>http://www.brad.ac.uk/business/business-service-charter/feedback/complaints/</u>

This service is also registered with the *Care Quality Commission* which you can also contact if you have any concerns about bad practices or poor quality care.

Care Quality Commission (CQC) Tel: 03000 616161 www.cqc.org.uk