



Government of **Western Australia**  
Department of **Health**



# Visual Electrophysiology

Medical Technology and Physics  
Sir Charles Gairdner Hospital





## Your Appointment

Please confirm your appointment by ringing **6457 2866** within 3 days of receiving your appointment letter.

If we have your mobile number, we will automatically send you an SMS courtesy reminder the day before your appointment.

## What to bring

You will need to bring:

- \* All your current glasses (including reading glasses).
- \* Your Medicare card for bulk billing, if you have been referred by a private practitioner.
- \* We prefer you to wear your glasses rather than contact lenses. However, if you wear contact lenses, please also bring your contact lens prescription, container and solution.

## Where to go

Medical Technology and Physics on the Ground Floor of G Block. Enter through the glass sliding door off Watling Walk near the Blue Lifts. Refer to the map at the front of this booklet.

## Transport and parking

For travel arrangements and other useful information about the hospital, please visit [www.scgh.health.wa.gov.au](http://www.scgh.health.wa.gov.au) and go to the 'For patients and visitors' section.

## How long will it take?

This depends on which tests you are having. Your appointment letter will tell you how long your visit will be.

## Side effects

Your eyes should have recovered completely by the following day. In the unlikely event that your vision remains blurred or you are suffering any irritation, redness or burning sensation of the eyes, you should seek medical advice as soon as you can. Also, please let us know.

## Need to know

If you are having an EOG, ERG or MFE, you will have eye drops to dilate your pupils and driving may be unsafe for a couple of hours afterwards. It is advisable to arrange to be driven home if you are having any of these tests.

No face makeup if possible (especially eye makeup).

No contact lenses if possible.

## Your Results

According to hospital policy, results are not provided directly to you. Your report is sent to your referring specialist, usually within four weeks after your appointment.

## Feedback

We welcome any feedback you may have on any aspect of your visit to our department. You may freely choose to complete either of two forms or register a complaint with the hospital.

The following are available in the reception area.

- \* Customer Service Questionnaire, Visual Electrophysiology Clinic.
- \* Sir Charles Gairdner Hospital "Tell Us About Your Experience At Our Hospital" brochure.
- \* The Western Australian Public Patients' Hospital Charter.

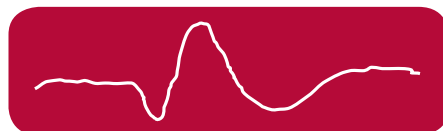


## Research

A summary of our research on Inherited Retinal/Macular Dystrophies is described in another booklet, available in reception.

## Visual Electrophysiology

Your specialist has requested that we carry out Visual Electrophysiology tests on you.



## What is Visual Electrophysiology?

The eye "sees" by changing the light which enters the eye into tiny electrical signals. These electrical signals are generated by cells in the retina. The signals undergo complex interactions with each other and eventually the "message" is conducted along the optic nerve pathway to the "visual processing centre" at the back of the head.

By placing specialised electrodes around the eyes and on the scalp, these tiny signals can be recorded. In much the same way that cardiologists use electrodes to record the function of the heart (the ECG), we use electrodes to measure the function of the visual system.

The tests performed in this clinic comply with ISCEV (international) standards and the department is accredited to AS/NZS ISO 9001:2008.

## Tests Of Visual Function

When you arrive for your appointment, you may have any one or more of the following short tests. They help us determine how well you can see. It is therefore essential that you bring all your current glasses with you.

### Visual Acuity – 5 mins

Reading a chart to measure sharpness of vision from a distance.

### CSM (Contrast Sensitivity) – 10 mins

Reading letters of decreasing contrast on a chart.



### AMS (Amsler Grid) – 5 mins

Recording any distortion in your central vision.

### DAD (Dark Adaptation) – 30 min

Measuring the lowest level of light you can see in the dark at one minute intervals, for approximately 30 minutes.

### D15, FHH, ISH, DDF

### (Colour Vision Assessment) – 5-30 mins

Assessing your colour vision.



## EOG (Electro-Oculogram)

45 minutes

The EOG is a test of pigment epithelial cell function. These are cells which keep the retina healthy.

Unless you have already had an ERG, you will need to have dilating drops, which can sting, but for no more than a minute. With small skin electrodes placed near the eyes, your head is positioned at the opening of a Ganzfeld dome. This dome provides even illumination of the retina.

In the dome, two horizontally spaced red targets light up alternately over a period of fifteen seconds. You must track the lights with your eyes, keeping your head still.

This eye movement exercise is done every minute for fifteen minutes in the dark, followed by fifteen minutes in the light.

The test is totally painless although you may experience some discomfort when the light is first turned on after the dark phase.

Please read the 'Need to Know' section on page 5 about dilating drops.



## ERG (Electroretinogram)

75 minutes

*Please see Paediatric Clinic for children under four years of age.*

The ERG is a test of retinal function.

For this test, you will have dilating drops which can sting, but for no more than a minute. You will then need to rest in a completely darkened room for 20 minutes to dark adapt.

After dark adaptation, local anaesthetic drops are applied to desensitise the eyes. Then, a fine wire electrode (HK-loop) is gently positioned to touch the surface of the eye beneath your lower eyelid for each eye. You may feel some irritation, similar to an eyelash in the eye.

With your head positioned in front of a special Ganzfeld dome, you will be exposed to a series of light flashes of increasing intensity. A period of ten minutes elapses, for you to light adapt, before the last part of the test, which is usually over within a minute.

Please read the 'Need to Know' section on page 5 about dilating drops.



## PRG (Pattern Electroretinogram)

45 minutes

The PRG provides us with specific information about the function of the macula, the part of the retina which is responsible for central vision, and the optic nerve.

Small skin electrodes are applied near the eyes and on the forehead, which is totally painless. Local anaesthetic drops are then applied to desensitise your eyes before we gently place specialised thin gold foil electrodes to touch the surface of the eyes beneath your lower eyelids. You may feel some slight irritation, similar to an eyelash in the eye. The electrodes remain on your eyes for ten to fifteen minutes.

You will view a reversing checkerboard pattern on a TV screen for approximately two minutes at a time. Two recordings are performed for each of two pattern reversal rates.

Contact lenses must be removed beforehand.

## VEP (Visual Evoked Potential)

60 minutes

*Please see Paediatric Clinic for children under four years of age.*

The VEP provides us with information about optic nerve function.

Four skin electrodes are applied to your scalp and one to your forehead.

You will view a reversing checkerboard pattern on a TV screen for periods of about two minutes. The eyes are tested one at a time with a patch over the other eye.

Usually, two pattern sizes are used and, occasionally, a light flash rather than checkerboard pattern is used to stimulate the visual pathway.



## MFE (Multifocal Electroretinogram)

30 - 50 minutes

The MFE is a test of central retinal, or macular, function.

Unless you have already had an ERG you will need to have dilating drops, which can sting, but for no more than a minute. Local anaesthetic drops are used to desensitise the eye. With a special contact lens electrode placed gently over the eye, you will view a rapidly changing pattern on a small screen for approximately five minutes. Each eye is tested separately.

Please read the 'Need to Know' section on page 5 about dilating drops.



## Paediatric Clinic

2 to 3 hours for children  
under four years of age

Your paediatric specialist has requested that we carry out some vision tests on your child. He/she will usually have a VEP (for optic nerve function) and an ERG (for retinal function).

It is important that your child is awake and alert for these tests, so if your appointment falls during a period when your child is normally tired, resting or asleep, please telephone our receptionist on **6457 2866** to arrange a more suitable time.

For the VEP, some small button electrodes are placed on your child's scalp and a flashing light is used to stimulate the visual system. Each eye is tested individually with the other eye patched.

For the ERG, eye drops are used to dilate the pupils. These drops make the eyes sting when applied. Your child then rests in a darkened room for 20 minutes to dark adapt. You are welcome to bring your child's favourite CD to help him/her relax in the dark room. After dark adaptation small electrodes are placed near the eyes and a flashing light is used to stimulate the retina.

It would be most useful if you could remain with your child during the test procedure. This will cause your child minimum stress and is likely to provide much more useful test results.





## Medical Technology and Physics

Entry through glass sliding door off Watling Walk

Ground Floor, G Block (near the Blue Lifts)

Sir Charles Gairdner Hospital

Hospital Avenue

Nedlands 6009

**T: (08) 6457 2866**

**F: (08) 6457 3466**



This document can be made available  
in alternative formats on request for  
a person with a disability.

Produced by:

Medical Technology and Physics

Sir Charles Gairdner Hospital

© Department of Health 2014

Copyright to this material is vested in the State of Western Australia unless otherwise indicated. Apart from any fair dealing for the purposes of private study, research, criticism or review, as permitted under the provisions of the *Copyright Act 1968*, no part may be reproduced or re-used for any purposes whatsoever without written permission of the State of Western Australia.