

EyelightS

The Newsletter of **GLAUCOMA NZ**
TO SAVE SIGHT

About Glaucoma New Zealand

Our membership has increased markedly and is nearing 1,000. Our aim is to reach all New Zealanders who have glaucoma or are interested in preventing visual loss from it. We can then disseminate information widely and be of greater service to our community. Please help us to reach this goal by encouraging membership, which is now free.

We are raising sponsorship through the Auckland adidas

marathon on 31st October. All the trustees of GNZ and Gael Wright, our Administrative Manager, will be participating. If you would like to register a pledge, or run for us, please contact Gael.

Finally, please send us any questions or topics regarding eye care and glaucoma that you would like included in future EyelightS. We want EyelightS to be a useful and interesting source of information for all.

Public Meetings

In June Glaucoma NZ went North. Whangarei was standing room only with more than 150 attendees. Kaitia was a smaller meeting but still much appreciated by those who attended. Our thanks to Dr's David Dalziel and Geoff Wallace for speaking at these meetings.

July was Taupo's turn and a large crowd braved heavy rain and a cold wind to hear Dr Keith Gross speak at St Andrew's Church.

August was Save Our Sight Month, an initiative organized by

the NZ Association of Optometrists in association with the Royal NZ Foundation for the Blind and Retina NZ. As part of our involvement in the month we held four meetings in Auckland, covering South, West, the North Shore, and central Auckland. Speakers were Dr's Dean Corbett, Stephen Best, Mark Donaldson, and Helen Danesh-Meyer.

Lions Clubs throughout the country continue to support our meetings and we continue to be very grateful for that support!

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Public Meetings continued.....

In September we went South to Timaru, Ashburton and Christchurch. In Timaru the local Methodist Church would like to know our secret after we welcomed 210 into their church but the record for attendance only lasted a few days. Christchurch blew it away with an estimated 280 attending. We apologise to those who did not get a seat and promise to book a larger venue next time! Dr's Michael Mair and Ken Tarr addressed these meetings.

We have a busy schedule of meetings coming up,

Wellington will be on 16th October at the St John's Conference Centre, corner of Dixon and Willis St, starting at 10.00am.

Dates have been set for Invercargill (6th November), Oamaru, (8th November), Alexandra (10th November) and Dunedin (13th November). Venues for these meetings will soon be on our website www.glaucoma.org.nz or phone (09) 3738779.

Focus on Research

Heidelberg Retina Tomograph and Glaucoma

Assessment of the optic nerve is an essential part of eye examination for diagnosing and monitoring glaucoma.



Figure 1

Traditionally, its documentation relied on direct visualization and drawings of the optic nerve head (the visible part of the optic nerve at the back of the eye) by clinicians.

Recent technological advances mean that the optic nerve can now be studied objectively rather than simply by subjective observation. One of these technologies is the Heidelberg Retina Tomograph (HRT). The HRT is a scanning laser ophthalmoscope that allows 3-dimensional imaging of the optic nerve (Figure 1).

It utilizes a special light in a camera, which is safe to the eye. Thirty-two cross sections of the optic nerve head are acquired over a depth

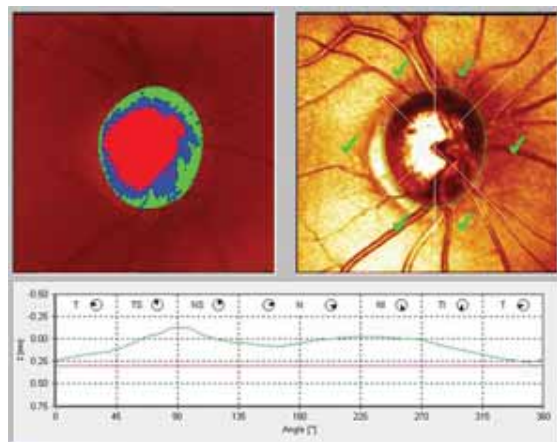


Figure 2

of 3.5mm and a colour-coded surface map of the optic nerve head is generated (Figure 2). Several different measurements are produced to assist the clinician in determining whether there has been some damage to the optic nerve due to glaucoma. It is fast (a few seconds per scan), non-contact and does not require dilating drops to enlarge the pupil prior to the scan. It is reproducible and useful for monitoring changes over time.

The One-Eyed Trial

Why Only One Eye?

“You told me that I have glaucoma in both eyes. So why ask me to put drops in only one eye?”

The simple answer is that treating one eye for a short time gives the best indication of the effectiveness of treatment. There is great value in initially having one untreated eye as a control.



The response to any glaucoma medication is variable. In addition the Intra-ocular pressure also varies from day to day and during the day. A change in pressure may be taken as due to the treatment when in fact it is a reflection of the normal variation in pressure. The pressure after treatment is commenced could be measured lower at a subsequent appointment because of the “natural” variation in pressure. This normal variation in pressure occurs equally in both eyes. Therefore if both eyes have a similar pressure before treatment your specialist may decide to initially treat only one eye. At a subsequent visit the difference in pressure between the treated and untreated eyes indicates the effectiveness of the medication. Both eyes may have a higher or lower pressure then before treatment

commenced but it is the difference between the two eyes that is all important in assessing the value of the chosen medication. Usually a short delay in treating one eye will not cause any damage but the value of knowing the effectiveness of a medication is very important.

The Reversed One – Eyed Trial

Sometimes your specialist may suspect that one of your medications may no longer be necessary. Withdrawing medication from one eye only is a safe choice. If both eyes maintain a similar pressure then the medication was not required and it can be withdrawn safely from both eyes. Again, the normal variation in pressure that occurs will happen in both eyes.

Intra-ocular pressure varies in the same person for many reasons. Diurnal pressure variation refers to the change that occurs naturally throughout the day. Medications for other conditions e.g. steroids, may increase the pressure. Glaucoma medications should lower the pressure but the effect is not the same for everyone. For some medications the initial effect is greater then the long-term stable effect. This is called tachyphylaxis. Then there is the long-term progression of the disease that will raise the pressure. Your specialist is aware of all these factors and therefore will choose a one – eyed trial when it is appropriate.

Recycling

Some members have kindly sent their Glaucoma Video back for us to re-use in another membership pack. We do appreciate this but would like to suggest another option. Pass the video on to a friend or family member who you think would benefit from watching the video. This way the video can be used again many times to spread the word but you save the \$3.50 postage

Pseudoxfoliation Syndrome

What is it?

In Pseudoxfoliation Syndrome(PXF), flaky white material clogs the trabecular meshwork, which is the gutter that drains fluid away from the eye. Because this prevents fluid from draining properly, there is a build up of pressure inside the eye, sometimes to very high levels.

Who gets it?

With most glaucoma, no cause can be identified. However, of the few types of glaucoma in which a cause can be identified, PXF is the most common cause. It is estimated that PXFS accounts for about 25% of all glaucoma, or about 16 million affected people world wide. PSXF is found in every race and ethnic group in the world, but is more common in people of Scandavian descent.

How does it affect my eye?

Glaucoma: About 25% of people with PXF have elevated pressures or glaucoma. However, not everyone with PXF will go on to develop glaucoma. PXF can often be detected before glaucoma develops. Sometimes both eyes are not affected to

the same degree. Glaucoma resulting from PXF usually is more severe, with pressures being higher, than many other types of glaucoma. So it is especially crucial that people with PXF be monitored closely and regularly by a professional so that glaucoma can be picked up at the earliest stage if it develops.

Cataract Surgery: eyes with PXF are brittle which makes the chances of complications greater than eyes without PXF. Your doctor will endeavour to minimise these risks.

Are there special treatment considerations for PXF?

1. Eye drops: your doctor will decide the drop the will best suit you.
2. Laser treatment: A special type of laser treatment (argon laser trabeculoplasty) is often very successful in patients with PXF. Sometimes laser treatment is used in combination with other treatments.

Keeping Your Blood Vessels Healthy

Do Diet and Physical Activity Really Help?

We know that keeping your weight down and yourself physically fit helps to prevent heart attacks and diabetes. We also know it is important for your overall well-being. How pleasant to know therefore that these measures also help you to protect yourself from glaucoma.

Blood vessel health and thus visual health is promoted by avoiding obesity, and remaining as physically fit as possible. Exercise to the

limits of your comfort and ability is highly recommended, a bonus is the added slight reduction in eye pressure exercise produces for some hours. The only exercises to be avoided are those in which your head is held below your waist - such a posture increases eye pressure. Yoga lovers take note.



How Does This Affect my Optic Nerve and my Eye Pressure?

Firstly, any measures which maintain the health of all blood vessels (eg. not smoking, ensuring normal blood pressure and cholesterol levels, controlling diabetes and body weight) will enhance the blood vessel nourishment of the optic nerve fibres; and secondly as mentioned above, physical activity actually reduces eye pressure directly for a few hours at least.

Is sex safe?

Now that we have your attention (!) from a glaucoma point of view, in a word yes – sex is safe. Just don't hang head down for prolonged periods!

Is a Particular Diet or Food Choice a Problem for Glaucoma Patients?

No specific foods are particularly good or bad for glaucoma treatment. Because optic nerve health depends in part on healthy blood vessels, food that helps to maintain blood vessel health is likely to promote visual health: reduced saturated fats and increased intake of vegetables and fruit are desirable. Red wine also helps to provide extra anti-oxidants and the alcohol content tends to reduce eye pressure, albeit temporarily. So, a little red wine almost every day is not a bad idea. Your liver will not like too much however!

Visual Fields Testing

Visual field testing is the single most reliable tool that ophthalmologists and optometrists have for detecting and monitoring the progress of glaucoma. It is vital that people who are having this test performed on their eyes be as cooperative as they can be while it is being conducted. This article aims to provide some understanding of what is actually happening inside that dimly lit bowl with all the flashing lights and buzzing sounds.

When we close one eye we see the world through an oval shaped hole which is referred to as our peripheral visual field. If we keep our eye still on one object this is referred to as fixation. While keeping our eye still on that object it is possible to notice that anything seen in our peripheral field is not as clear as the object that we are looking at. This loss of clarity is a gradual effect which increases the further we are away from that point of fixation. Quite a useful comparison is between what we actually see and a photograph, whereas a photograph is clear across the entire image, our vision is only clear in a very small area within

the centre. Some eye conditions do not affect the central clear part of the image but only cause damage to the peripheral part, these areas of damage are called field defects or scotoma, (plural scotomata). Glaucoma is one of these conditions and it causes scotomata that have characteristic shapes. Because we have two eyes and a large percentage of our visual field is contributed to by both eyes seeing the same thing, it is possible to lose quite significant portions of our visual field and yet be unaware of it. Also if only one eye is open we may be unaware of significant peripheral field loss.

One of the methods that ophthalmologists and optometrists have of detecting these visual field defects is using a test referred to as perimetry. There are a variety of perimeters available but broadly speaking they divide into automated perimeters and manual perimeters. Most people nowadays who are having their eyes checked for glaucoma will have their visual field assessed on an automated perimeter.

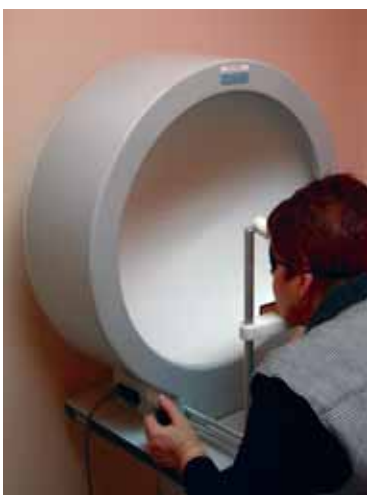
Perimeters

There are many varieties of perimeters available but they all rely on a similar principle namely: while having you keep your eye still on a fixation target in the centre of the perimeter, lights of varying sizes and intensities are either flashed or moved within the area peripheral to your fixation point. A button attached to a buzzer enables you to signal when you are able to detect the peripheral lights. It is essential to keep your eye as still as possible on the fixation point while this test is taking place and all automated perimeters have a system for ensuring that this occurs. If you indicate having seen a target when it is not actually present, this is referred to as a false positive. If the machine thinks that you should be able to see the target and you have “fallen asleep” or forgotten to push the button, this is referred to as a false negative. The number of times you fail to concentrate on the fixation spot is also recorded, this is referred to as a fixation loss. Please do not be afraid to ask the person testing you to tell you about your fixation losses or false positives and negatives because it

could improve your test results next time if you know how you can assist. It is also important to emphasise that the perimeter is double checking on most of your responses so small errors will usually be ignored.

We all have different sensitivities to light in our peripheral retina and because this sensitivity changes with age, a computer inside the perimeter needs to assess your particular sensitivity with a short trial (2-3 minutes) before the test can begin. If you have had your fields tested many times before, some machines will remember this and automatically set the intensities for your personal peripheral visual sensitivity. When the results are printed out they show the areas where you are having difficulty seeing the target. These areas of difficulty are displayed as shades of grey or even black if you can't see it at all.

Because diseases like glaucoma form a fairly predictable pattern of loss it is possible to have the machine make a basic form of diagnosis by analysing the pattern, comparing one pattern with a series of previous patterns or comparing the top half of the visual field with the bottom half to ensure that the losses are consistently in one area and not just a generalised decrease in ability or an artefact. Generally speaking most ophthalmologists treating glaucoma rely heavily on the visual field information to indicate whether the treatment that they are prescribing is successful or not. For this reason it is essential to get an accurate and repeatable result at regular intervals. A number of systems exist within the computer of the machine to enable compatibility, verification and standardisation of the results to take place. Some visual field tests take longer than others. One of the difficulties with visual field testing is that if the subject becomes tired during the test, their responses become less reliable and consequently the results are



A patient having their fields tested on a perimeter

less accurate. To avoid this occurring a number of automated perimeters provide what are referred to as screening tests. These tests enable a relatively rapid assessment to be done in the major areas of likely defects, so that patients can be tested quickly and effectively for any possible problems. However the more detailed tests, the ones that take longer, are more accurate and hence more reliable for the sort of monitoring that is required for treating glaucoma.

Some of the more modern perimeters use what is referred

to as an algorithm to enable them to establish the visibility threshold. There are a variety of algorithms some of which are extremely fast and enable this threshold to be determined very rapidly. These fast algorithms tend to be used for the screening programmes more than the management type of programmes. However a lot of energy is going into developing faster techniques to reduce the time taken even for a full threshold test, some of which can take up to twenty minutes per eye.

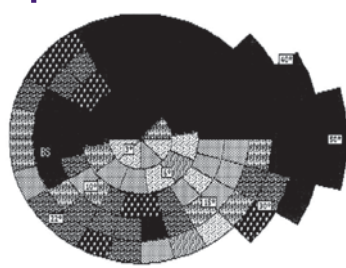
Some new techniques for screening becoming available are specifically designed to detect glaucoma. Two that you may come across are short wavelength automated perimetry or SWAP, and frequency doubling technology

which is abbreviated to FDT. The SWAP perimetry uses a blue spot of light on a yellow background, the theory being that one of the first forms of damage caused by glaucoma is loss of the ability to see shorter wavelengths, ie blue light. By providing better contrast such as blue against a yellow background, that loss will be emphasised. The frequency doubling

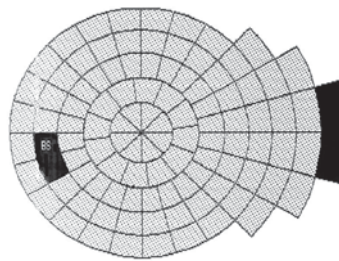
technology relies on a similar principle, namely that information about certain properties of flashing lights are transmitted by the same neural

mechanism that is responsible for transmitting blue light and again this appears to be selectively damaged by glaucoma. A perimeter which uses a frequency doubling principle or a SWAP system is believed to be able to detect the early changes in glaucoma before conventional perimeters, although this remains a slightly controversial issue.

It is an unfortunate fact that in glaucoma quite a lot of nerve damage has occurred before it actually manifests as a visual field loss. These new techniques intended to detect those early losses before they become apparent to the subject, allow treatment to be instigated when required and avoid unnecessary treatment of visual field "changes".



The grey areas are indicative of relative loss, the black are areas of total loss.



An example of a normal visual field

Contact Us with Your Questions & Comments

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YES, I would like to help

I would like to become a member of Glaucoma NZ at no cost (previously \$40.00 p.a.)

I would like to donate \$_____

I enclose my cheque for \$_____ made payable to Glaucoma NZ or please debit my

Visa Amex Mastercard Name on Card _____

Card No ____/____/____/____ Expiry ____/____ Signature _____

Address _____

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Donations of \$5.00 or more are tax deductible

I am interested in becoming a volunteer for Glaucoma NZ

I would like information on leaving a bequest for Glaucoma NZ

adidas Auckland Marathon

Have you registered for the adidas Auckland Marathon, Half Marathon, or 10 km event on 31st October? Would you like to be part of the Glaucoma NZ Team?

All you have to do, apart from run, walk, or crawl your event, is to ask your friends and family to sponsor you for a few dollars. We only ask that you raise a minimum of \$50 sponsorship and in return we supply you with

- ♦ A Glaucoma NZ Tee Shirt
- ♦ A sports bum/water bag
- ♦ Prizes for first male and female Glaucoma NZ entrant in each event
- ♦ A pair of gazelle ClimaCool running glasses for the person raising the most funds
- ♦ Spot prizes

♦ Barbeque in the Park after the Marathon.

Come join all the Glaucoma NZ Trustees who will be participating – Helen Danesh-Meyer, Ken Tarr, Gordon Sanderson, Mike O'Rourke, John Bishop and Mark Donaldson.

After registering for the event on www.aucklandmarathon.co.nz contact Gael Wright for a sponsorship form. If you are not entering yourself but know a friend or family member who is please tell them we would love to have them join us. And if you live in the Deep South and don't fancy a weekend in Sunny Auckland, but you are entering another sporting event, we can provide a tee shirt and sponsorship form for that instead!

The Trustees and Sponsors of

Dr Ken Tarr (Chairperson)
Assoc Prof Helen Danesh-Meyer
Gordon Sanderson
Dr Mike O'Rourke
John Bishop
Dr Mark Donaldson

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