

# Eyelights

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

## About Glaucoma New Zealand

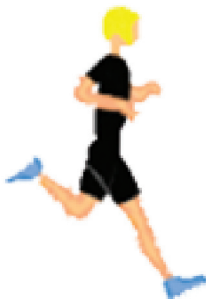
**2006** brings big changes for Glaucoma NZ as Gael Wright, who has been with GNZ from the opening of our office in early 2003, and has had the challenge of getting Glaucoma NZ up and running, leaves us to travel to the UK. Many of you will have met Gael with her friendly introduction and conclusion at our public meetings. She has organised 34 public meetings, produced 10 Eyelights, and enrolled some 2500 of you all to receive our educational material, as well as maintaining our office and other activities. One highlight of Gael's work has been the link forged with the YMCA Marathon Club and runners in the Auckland marathon, which raised awareness about glaucoma in the community and also raised funds for Glaucoma NZ. Last year Gael was outstandingly successful in raising over \$17,000 from this activity. We congratulate her on this fine achievement and wish her good health, happiness and fulfilment with her move to the UK.

Community recognition of glaucoma and its harmful effects requires not only Glaucoma NZ to promote the cause but

individuals and organisations in our community to participate with us. We are keen to link with community groups, clubs and organisations to raise awareness about glaucoma. If you can provide a link, please contact our office.

What do patients with glaucoma know about their eye condition? Providing information about glaucoma to patients and interested persons is core business for Glaucoma NZ. To enhance this service Glaucoma NZ is undertaking a "Knowledge and Quality of Life in Glaucoma Survey" through The University of Auckland Department of Ophthalmology. You will be given the findings later in the year! But we also encourage you to ask questions or raise topics that you would like addressed. Just contact our office.

Information about glaucoma is available on our web site [www.glaucoma.org.nz](http://www.glaucoma.org.nz) and Eyelights will continue four times a year. Please encourage anyone you know who has glaucoma or is at risk of glaucoma to enrol with us. Enrolment is free.



Volume 3, Issue 1

February 2006

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## Argon Laser Trabeculoplasty (ALT)

Argon Laser Trabeculoplasty, also known as ALT, is a procedure which has been used for many years in the treatment of glaucoma.

ALT can help in treating many forms of glaucoma, though more recently it has been shown to be particularly useful for some secondary glaucomas - such as pigment dispersion glaucoma and pseudoexfoliative glaucoma.

In the ALT procedure, the surgeon directs a laser beam into the trabecular meshwork, which is the primary aqueous (fluid) draining channel of the eye. The trabecular meshwork is located in the angle of the eye, approximately where the cornea meets the iris. Most of the time only half of the trabecular meshwork is treated with tiny laser burns – this may require as many as 80 individual laser burns in one sitting.

Typically the ALT procedure is performed in the clinic room or office. The patient is seated at the laser machine, a local anaesthetic eye drop numbs the eye, and a contact lens is applied to the front of the eye. The laser energy is then delivered by the ophthalmologist through the contact lens.

The procedure is usually painless or results

in only minor discomfort. The patient usually requires treatment with anti-inflammatory eye drops for a few days afterward. It is very rare for the procedure to affect vision. The patient would usually continue their glaucoma drops until their next clinic appointment, usually made some weeks after the procedure.

### **Is ALT treatment a substitute for glaucoma eye drops?**

ALT can be thought of as having the same effect as a glaucoma eye drop on lowering the pressure within the eye, but without the side-effects of a medication. Depending on the severity of the glaucoma, ALT may be suggested in addition to continuing drops, or as a substitute for drops.

### **Is the effect of the treatment permanent?**

Most of the time, the pressure lowering effect of ALT will last 3-5 years. If the initial treatment was effective, a second ALT treatment may be recommended after this time.

### **Is the procedure safe? What are the risks?**

The most common complication following ALT is a mild increase in inflammation, or pressure spikes, and possible worsening of glaucoma. The complications are very rare however, and are even more rarely serious.

## Glaucoma NZ Funds Research

The first Glaucoma NZ Research Grant has been made available this year to promote research into glaucoma by New Zealand investigators. We have a validated and independent mechanism to assess applications and only research projects that reach a high standard of scientific merit will be supported.

In New Zealand we have the teams of research workers with the expertise, initiative and drive to succeed but the fuel they need

is funding. We encourage you to support research into glaucoma through Glaucoma NZ. All donations and sponsorship tagged for research remain exclusively for that purpose.

If you wish to support glaucoma research please send your donation to our office. If you wish to know more about providing sponsorship or bequests for glaucoma research please contact the chairman of Glaucoma NZ.

## Research in New Zealand

**Research** (noun, *re-surch*) studious inquiry or examination; *especially* : investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application

If we were to eavesdrop on a conversation of people discussing the latest news bulletin outlining a breakthrough in a particular field of medicine, we would often hear people using variants of the phrase “Did you know, they have discovered a cure for .....?” If pushed to identify the ‘*they*’ in this sentence, most people would allude to eccentric

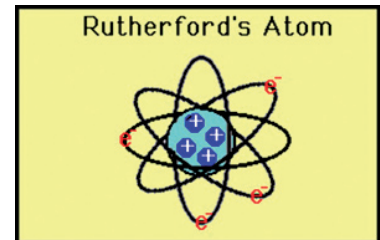


scientists in white coats with wildly unkempt hair (if indeed they had any hair left on their oversized craniums), beavering away in solitude in concealed laboratories. In truth, teams of researchers make breakthroughs in modern

medicine. Teams that consist of scientists and doctors, working together to achieve significant steps forward in their chosen fields of research.

What successful research can be done in New Zealand? In New Zealand our medical research is very much concerned with the last phrase of the definition given above – the practical application of new or revised theories or laws! Certainly in eye research in this country, we are aiming at translational vision research. What is that, you may well ask? Well, it is research which aims to translate ideas from the laboratory into treatments for the patient. So, can research conducted in New Zealand compete with research conducted in the rest of the World? Our researchers certainly have the ability, Rutherford split the atom and

Wilkins (together with Watson and Crick) described the structure of DNA, and we have the centres of excellence in



our Universities, which provide the breeding ground for innovations. The limiting factor is funding, and medical research in New Zealand is grossly under-funded. In fact, Ernest Rutherford may well have been talking about New Zealand Science when he said “We haven’t got the money, so we’ve got to think!” Today, a large proportion of medical research conducted in New Zealand is funded by non-government organisations and Glaucoma NZ has joined their ranks.

How are the fields of research chosen? Medical research is driven by demand, with the most commonly occurring disorders providing impetus for the research teams. Teams driven by the wish of the researchers to use their skills to benefit the most people. Glaucoma is such a disease and with the funding now provided by Glaucoma NZ, one of our research teams will be able to focus their intellects on finding new treatments and preventative measures to stem the tide of blindness from glaucoma. Are we playing God in doing so? Not according to Galileo, who reasoned....”I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended us to forego their use.”

## Professor Tony Molteno

### Officer of the New Zealand Order of Merit

Glaucoma NZ congratulates Professor Tony Molteno on receiving, in the 2006 New Year's honours, the award of "Officer of the New Zealand Order of Merit" for services to ophthalmology and people with glaucoma.

Our last issue of Eyclights highlighted Professor Molteno as Glaucoma's Southern Man. We detailed the man and his remarkable glaucoma implant. By pure co-incidence our

government also acknowledged his contribution to glaucoma in this year's honours!

He is a man truly worthy of the accolade that New Zealand has bestowed on him. Professor Molteno, a man with an international reputation in the last century that may well be quoted in the next one, we congratulate you.



## Selenium and Glaucoma

With an organism as complex as a human being, it is usually very difficult to establish what role a particular chemical plays in the system, and what effects an increase or decrease of that chemical will have. Particularly as the same chemical can play many different roles, and influence many facets of the organism's functioning.

Selenium is a case in point. It was thought to be a toxic substance for many years, its role in human biochemistry only started to be unraveled in the 1970s. While selenium and selenium compounds are indeed quite toxic, trace amounts are necessary to maintain health. Selenium is necessary, amongst other things, for the proper functioning of the thyroid gland, and deficiencies in selenium intake have been linked to conditions as diverse as asthma and AIDS. Selenium appears to be helpful in the treatment of certain cancers.

Selenium compounds are powerful antioxidants, particularly glutathione peroxidase. Glutathione peroxidase neutralises hydrogen peroxide, a damaging oxidising agent. In addition, it regulates vitamins C and E, which are also antioxidants. There is some evidence that selenium helps keep the eye healthy. Selenium appears to be beneficial with

age-related macular degeneration, and may protect retinal pigment cells from damage. Vitamin E and selenium when taken together have a synergistic effect - both of them together provide more benefit than either alone. Vitamin E seems to be helpful both with macular degeneration and cataracts, and there is some evidence it can provide some protection to the optic nerve from damaging chemicals. So it may be helpful in treating glaucoma. There is some anecdotal evidence that selenium has a similar effect.

However, to complicate matters there is also evidence to suggest that selenium can contribute to glaucoma. In a large study done to examine the effects of selenium as a dietary-supplement on cancer patients, it was noted that people taking selenium had a higher risk of developing glaucoma. It may be that selenium interferes with the functioning of the trabecular meshwork, which is the structure responsible for draining the eye. This hypothesis gained some support by a laboratory study which showed that selenium would affect chemicals that govern the formation and destruction of the trabecular meshwork. Blockage of the meshwork could cause the intra-ocular pressure to rise,



resulting in glaucoma. It might seem odd and contradictory that the same chemical could be both good and bad for glaucoma, but it is possible that both could be true. The suggested mechanisms occur in different places - the beneficial effects are thought to be more to do with the optic nerve, whereas the bad effects are thought to occur with the trabecular meshwork.

There are many question-marks around the benefits of selenium for glaucoma patients. It is certain that selenium is an important mineral for good health, and there is good evidence to suppose that it is beneficial for eyes. There is some evidence that it might be particularly good for glaucoma, and some evidence it may in fact be contributing to it.

New Zealand is known to be low in selenium in its soils. However, there is no evidence that New Zealanders have suffered health problems as a result. Imported foods and the food supplements fed to animals provide us with the recommended levels of the mineral. Selenium can be dangerous if taken in high amounts, and it is often present in multivitamin pills and other nutritional supplements. Too much vitamin C - itself a necessary nutrient for healthy eyes - reduces selenium uptake from a diet. As usual, people intending on taking selenium supplements should seek the advice of their medical practitioner. For sure do not think that more is better or that mega-dosage assures longevity. If science was so certain we would all be living forever!



## Compliance: The Patient's End of the Bargain

**Compliance** is a measure of how closely a patient adheres to the prescribed medication programme. However it also involves the patient's active participation in their own health care: seeking medical advice, keeping appointments, following recommendations concerning life style, diagnostic investigations, as well as any treatment regime. Compliance is important for all medical conditions but is particularly relevant to glaucoma, a chronic disease. Visual loss in glaucoma often begins peripherally, with central vision preserved until late in the disease. Meanwhile, patients must commit to taking medications, often multiple medications, several times a day. These medications may have side effects ranging from minor and inconvenient to serious and disabling. All for a disease which often has no symptoms.

If you have any doubts about your need for treatment or your need to comply, it is

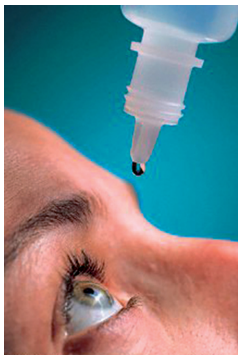
best to discuss the issues fully with your eye specialist. They will have taken the inconvenience of taking medications and the possible side-effects into account when deciding that the prescribed treatment is in your best interest.

### Non-compliance

Many patients miss the occasional dose. But regular "misses" is non-compliance. Other patients do not know how to take drops properly. Non-compliance can be defined as the intentional or accidental failure to comply with a physician's expressed or implied directions with regard to taking medications, having tests and attending appointments. The most advanced diagnostic and therapeutic techniques are of little importance if the patient is non-compliant. Non-compliance often leads to blindness for patients with glaucoma.

### Examples of Non-compliance

1. Failure to take medications. This includes missed doses, stopping using the medication(s), and ineffective methods of using eye drops. Unless instructed otherwise, you should take your medications as you normally do on the day of your visit to the eye specialist or optometrist.
2. Taking too much medication. Some patients, hoping for additional benefit, increase the number of doses and/or the amount taken each time - incorrectly assuming that if some is good, more must be better. Nearly always the extra dose will do no good. It is far more likely to lead to side-effects.
3. Taking a drug for the wrong reason. This may arise from confusion about the purpose of using a drug, particularly if several drops are being used.
4. Improper timing of drug administration. This is more likely to occur with complex administration of numerous eye drops at frequent or unusual times during the day. If drops are prescribed twice a day then ideally they will be instilled every 12 hours. However an interval of 10 to 14 hours between drops would usually be acceptable. Drops prescribed three times a day should be instilled soon after waking and shortly before retiring at night, and the middle drop halfway in between! When two or more drops need to be instilled about the same time, they should be separated by a minimum of 5 minutes and ideally by 10 minutes. Then the presence of the second drop will not interfere with the absorption of the first. Drops taken a minute apart can wash each other out of the eye without the full effect of each being obtained.



Some glaucoma patients use their eye drops only just after and just before their appointments. In surveys it has been found that halfway between appointments is the time when the least number of prescribed doses is taken. Non-compliance of this pattern will lead to visual field loss in a patient whose intra-ocular pressures are measured as being normal. The medication is working when taken but the patient is losing vision in between visits to the eye specialist when the medication is not being taken. If this non-compliance is not suspected or detected, patients may be subjected to expensive and invasive procedures and/or have their medical therapy accelerated (requiring higher drug concentration, number of drugs, and frequency of use), thereby increasing the risk of side effects and even worse compliance. It is best to fully inform your eye specialist or optometrist and discuss the issues in a responsible manner.

## Contact Us with Your Questions & Comments

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## Tachyphylaxis: What is it and Why is it Important?

Tachy is Greek for swift or rapid and tachyphylaxis indicates a rapid change in direction. In medicine it indicates that there has been a reversal of an initial good response to a medication.

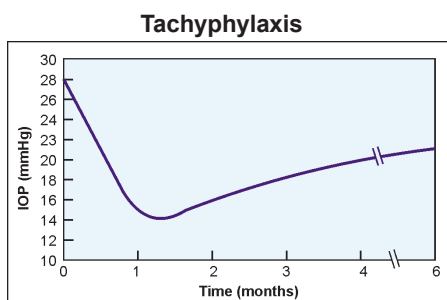
Sometimes with glaucoma medications there is a great initial drop in intra-ocular pressure for a few weeks or months only to be followed by a slow rise in eye pressure despite the fact that the patient has been compliant with taking their medication. The patient appears to develop resistance to the medication – this is a phenomenon called Tachyphylaxis – and has a reduced response to repeated administration of the eye drop. This resistance occurs at the cellular level. The medication is still absorbed well by the eye but the cell's chemistry has changed because of the presence of the medication. Only some patients respond in this special manner to a particular medication. It is likely that the response is genetically determined.

Tachyphylaxis frequently occurs with beta-blockers eye drops such as Timolol but also

occurs with other, mostly older, types of drops. Prostaglandin analogues (Xalatan, Travatan, and Lumigan) do not lead to tachyphylaxis, which is one reason why prostaglandins are increasingly used to lower eye pressure. And another very good reason why these medications should be freely available without requiring special authority applications!

Your eye specialist is well aware of this problem in assessing the response to an eye drop. It is firstly important to establish that there has been an initial good response with lowered eye pressure. The “One Eyed Trial”, treating only one eye initially, is part of that assessment. But, if a few months later the good response is lost, then two main possibilities arise. Is the patient still compliant in using the medication as directed? Or has tachyphylaxis occurred?

It is important to distinguish these two possibilities. We want the maximum effect in lowering eye pressure but with the minimum treatment regime. If your specialist is unaware that you are not using your eye drops, then it is likely that you will end up on more medications and a more demanding drop regime than is necessary. This often leads to a greater level of non-compliance and a vicious cycle of unnecessary changes to treatment and even surgery. Alternatively, if tachyphylaxis is confirmed, the current medication will be ceased and a different medication prescribed. While there is a change in medication the drop regime does not expand to an intrusive level of interference to daily activities.



*The response of Eye Pressure with the longterm use of eye medications*

### Moving House?

Don't forget to include Glaucoma NZ when you are doing your change of address cards. Remember, we have no way of knowing your new address if you don't tell us!

# YES, I would like to help

I would like to become a member of Glaucoma NZ at no cost

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 \_\_\_\_\_

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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

## The Fight Against Glaucoma

Glaucoma is a chronic disease that cannot be cured, but it may be managed and visual field loss may be prevented. If you have been diagnosed with glaucoma or ocular hypertension (elevated intra-ocular pressure), it is important to follow your doctor's instructions and take your medications as directed.

Because glaucoma has no obvious symptoms, it can be difficult to understand the importance of continued treatment. But consider that up to 40% of your optic nerve (the connection between your eye and your brain) may be damaged before you notice any difference in your vision! Make no mistake: you are in a continuous fight against the potential effects of glaucoma.

In this way, glaucoma is similar to conditions caused by high blood pressure or high cholesterol. We know the importance of lowering cholesterol and blood pressure to prevent heart attacks and other diseases and we must recognize the urgency of lowering intra-ocular pressure (IOP) in order to preserve vision.

Elevated IOP is the only treatable risk factor for patients with glaucoma. Therefore, it must be your primary focus in the fight against glaucoma. Reducing IOP by taking medication or through surgery is the best way to manage glaucoma and reduce the risk for progressive visual field loss. Clinical studies have shown that by lowering IOP, and keeping it low, patients may lower their risk for visual field loss.

**The lower your IOP, the better your chance of winning your Fight for Sight.**

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