

# Eyelights



The Newsletter of Glaucoma NZ  
Volume 8 | Issue 1 | April 2011

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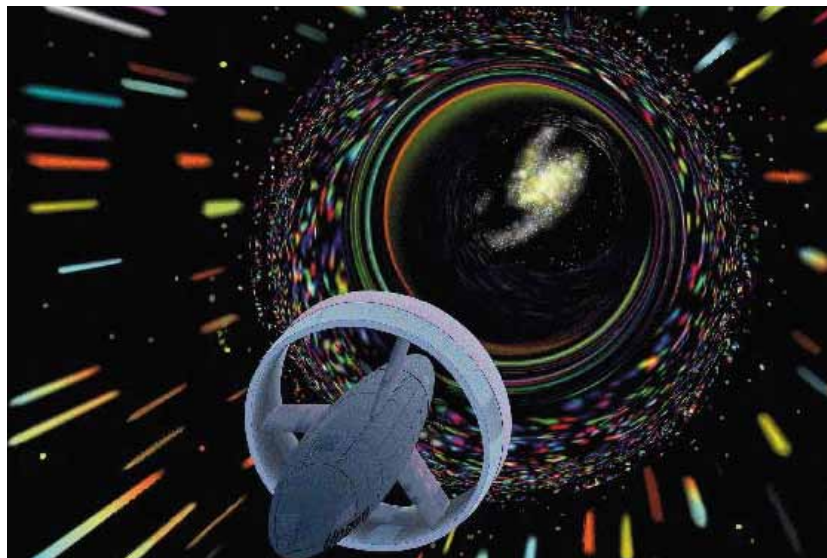
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## Outer Space Travel



If there are any of you with glaucoma are thinking of a career as an astronaut with NASA or any of the other space agencies, you had better think again! Some recent work looking at the effects of weightlessness on intraocular pressure (IOP) has shown that it rises considerably under low or no gravity. This also rules out a career as a fighter pilot, since they experience episodes of what is referred to as microgravity during some of their aerial manoeuvres and this can also raise their IOP.

In some instances the pressure rises by as much as 58%, not good if your pressure is already at the higher end of normal.

How can they possibly know this? Well believe it or not the clever people at NASA have developed a tonometer that provides continuous IOP readings during space flight. The end result is that missions to Mars or even the moon are not recommended for anyone with glaucoma. So you have been warned!

The mechanism for this remarkable rise in pressure hasn't been fully explained and will no doubt be the subject of further studies, but it is believed to be due to an increase in the choroidal pressure inside the eye. The choroid is a plexus of vessels that virtually surrounds the entire retina and provides it with most of its blood supply. Seemingly a reduction in gravity increases the volume of the choroidal plexus and because it is situated within the confined space

Continued over page...

of the eye, that has the effect of raising the intraocular pressure. Whether these changes are prolonged or go on to cause glaucomatous type damage has not yet been discovered. However it seems quite likely they would if the astronauts were left in that state for long enough, particularly if their eyes were susceptible to pressure fluctuations. That is the bad news.

The good news is that anyone with intraocular lenses would be eligible for a space flight. A 60-year-old astronaut who had intraocular lenses in both eyes (he was a physician mission specialist astronaut who had developed cataracts) recently flew in space. He had undergone cataract extraction and had intraocular lenses implanted in both eyes. Several months later, he flew on a space shuttle mission. Ocular examinations were performed before and after the mission, and the physician was questioned about visual changes during flight. None were found. He reported excellent vision during lift-off, eighteen days of microgravity, changes in cabin pressure, and re-entry. The article describing this does not say whether or not he had glaucoma.

## For New Readers

**To those of you who have joined Glaucoma NZ since the last issue of Eyelights, we welcome you!**

For your information here are some basic facts about glaucoma:

There are different types of glaucoma, but they all involve damage to the optic nerve, which is at the back of the eye.

Glaucoma is not curable. If you have glaucoma it must be monitored for the rest of your life.

Current treatments for glaucoma aim to lower eye pressure.

Medication in eye drops can have side effects on other parts of your body. Tell your eye specialist.

People of all ages can get glaucoma.

A family history of glaucoma means you are at much greater risk of developing glaucoma.

If you have glaucoma tell your relatives, especially those close relatives like sisters, brothers and adult children. They have an increased risk of developing glaucoma so advise them to have an eye examination.



Glaucoma NZ is a registered charitable trust which receives no government funding. We rely solely on donations, sponsorship, grants and fundraising. All the information available to you from Glaucoma NZ is free.

## The Glaucoma Journey – Part 1

So, you have never heard of glaucoma before and now you have been diagnosed with it. You have many questions you would like answers to. Concerns about your future eyesight raise the fear of blindness.

*This article is Part 1 of a series of three where we will look at 'The Glaucoma Journey'. Part 1 will explain what glaucoma is, who is at risk and the importance of early detection. In Part 2 we will look at how the diagnosis of glaucoma is made, what tests take place and the different types of glaucoma. Part 3 will look at the treatments available for those with glaucoma, why one treatment may be recommended over another and what decisions may require further consideration.*

### Well, what is glaucoma?

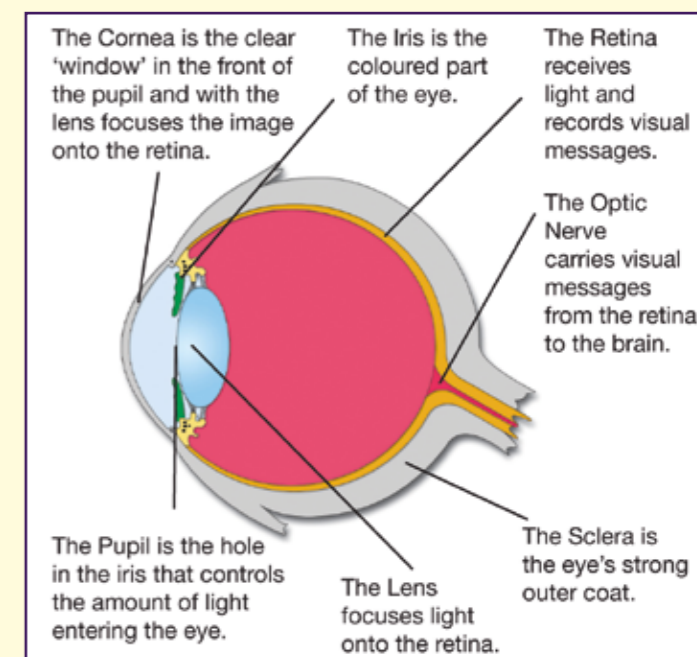
Glaucoma is the name given to a group of related eye diseases where the optic nerve at the back of the eye progressively dies taking away the peripheral (side) vision first. Vision loss is very slow and often undetected until quite advanced. Any eye sight lost cannot be regained.

In most people the damage is due to increased pressure inside the eye – a result of blockage of the circulation of aqueous (fluid), or its drainage. In others, the damage may be caused by poor blood supply to the vital optic nerve fibres, a weakness in the structure of the nerve, and/or a problem in the health of the nerve fibres themselves.

The eye is like a modern digital camera. We take a photograph, we connect the camera to a computer and we down-load the image. For the eye, an image is focused on the retina inside it; the image-message is then 'down-loaded' through the optic nerve to the brain so that we can see.

The eye is made from soft, but strong tissues and needs to maintain its shape so it can

focus light accurately. This is achieved by keeping the eye firm, like a balloon. The fluid within the eye is regulated to keep the eye shape. Excessive pressure causes glaucoma.



### How big an issue is glaucoma in New Zealand?

Glaucoma is the leading cause of preventable blindness in New Zealand and therefore is a significant health issue.

It is estimated that 68,000 New Zealanders over the age of 40 have glaucoma. Unfortunately 50% of those people with glaucoma don't know they have it. Most people experience no symptoms until it is too late to repair the damage that has been progressively getting worse over a long period of time.

As the population ages and people continue to live longer, more of us face the possibility of having this potentially blinding disease.

The good news is that glaucoma can be detected by regular eye examinations and the disease can be managed to prevent any

further damage to the eye. Early detection is vital in preventing blindness from glaucoma.

### Are some people at a higher risk than others for glaucoma?

Although anyone can get glaucoma, even babies, people in the following categories have a higher risk:

- Those people 60 years and over have six times the risk.
- A family history of glaucoma – it's really important for people to know if glaucoma runs in their family, because if it does, the risk increases ten-fold. Talk to relatives and ask if they can recall anybody taking eye drops because these may well have been for glaucoma.
- Short sightedness (myopia) – distant objects appear blurred
- High blood pressure
- Past or present use of steroid drugs, especially steroid eye drops
- Previous eye injury

### So what can we do to detect glaucoma early?

Regular eye examinations are the only way to detect glaucoma at its earliest stage, and prevent blindness.

Glaucoma NZ recommends that everyone have an eye examination for glaucoma by age 45, and every 5 years after that until age 60, then 3 yearly after 60. However if you are one of those people in the high risk category, then you should have an eye examination earlier than age 45.



Normal Vision



The same scene as it might be viewed by a person with glaucoma

If you require hobby glasses (over-the counter magnifying glasses) or are having problems with your eyesight generally then you should have your eyes examined at that time.

*Any feedback you have on these articles would be appreciated – it is your stories that help others realise they are not alone in their concerns and fears as they face this lifelong potentially blinding disease and make decisions as to how to manage it.*

### Message to Christchurch

To all our members, friends, family, colleagues and supporters in Christchurch our thoughts are with you during these very difficult and sad times. We send you our very deepest regards, and our every hope for the rebuilding of your lives and the city of Christchurch.

**Trustees and staff of Glaucoma NZ**

## Reader's Story

By Lionel Underhill

I used to have my eyes checked every two years. Just before moving to New Zealand in 1996 a routine examination revealed that my eye pressure was over 30. My optician at the time did not seem to be overly concerned about this.

Not long after arriving in New Zealand, I visited an optician in Tokoroa who was most concerned about my eye pressure of 30 plus, and said that something ought to be done immediately. He arranged for me to see an eye specialist at the Hamilton Hospital where I was diagnosed, age 53, as having open angle glaucoma and was immediately put on Timoptol drops 0.5ml in each eye twice a day.

As the treatment progressed, my eye pressure gradually came down to the stage where the drops were reduced to once a day only. When the pressure dropped to just 20, the strength of the drops was also lowered to 0.3mgs/mls.

In 2004 we moved to the South Island and I came under the care of Christchurch Hospital. My drops were changed to Lumigan 0.3mgs/ml, and regular monitoring by the Christchurch Hospital show that the treatment is well on track, as my eye pressure is constant at around 16-18 – a great improvement. I have my eyes examined approximately every 9 to 12 months, which includes a visual field test every other visit.

I haven't had any real problems with the eye drops; I put them in myself every evening without fail, which I don't consider a chore as

I am grateful for the help they give me in controlling the glaucoma.

My mother has glaucoma which prompted me to get my eyes examined in the first instance. I have one sister and two brothers in the UK and upon my diagnosis I urged them to have their eyes checked. Thankfully there are no signs of glaucoma for them and their tests continue to be clear.

I talk regularly to my two daughters (37 and 39 years old) about the importance of 'keeping a close eye (sorry about the pun) on their sight', especially with the added risk of our family history.

I am eternally grateful to the eye health professionals in New Zealand for their quick action, and continued concern and treatment.



Lionel and his wife Marlene

### Readers Story Contributions

If you would like to share your glaucoma story with readers, we would love to hear from you. Please email, post or fax your story to Glaucoma NZ, attention Eyelights Editor.

## Juvenile Glaucoma

### Look out for signs of glaucoma in babies and young children

**Yes**, babies and children can have glaucoma. In fact an infant can be born with serious eye problems due to glaucoma. It is rare but it is also very important to recognise it immediately. Treatment can prevent life long blindness.

Look out for these features in every new born infant:

**Large prominent eyes** - The outer coat (sclera) of a child's eye is much softer and more flexible than that of an adult. As a result, if the pressure rises in the eye, the eye expands rather like a balloon being blown up. This enlarged eye size is one of the best indications of raised eye pressure in a child. Reducing the pressure does not usually bring the eye back to its normal size.

**Sensitivity to Light** - Children with raised intraocular pressure often become very sensitive to light. There are several causes for the glare. The clear window of the eye (cornea) may be slightly waterlogged and cloudy, which can be uncomfortable. When the cornea is not absolutely clear, light bounces off the cornea irregularly and causes glare. Even after the pressure is lowered, some degree of sensitivity to light may persist in the long term.

**Squeezing the eyes shut** - An infant with glaucoma often wants to keep the eyes shut very tightly. This is called blepharospasm. It is not surprising given the pain, discomfort and glare being experienced.

**Cloudy Eyes** - The cornea has a single layer of cells on the inside which pump water out of the cornea, keeping it clear. If the pressure inside the eye rises sufficiently, fluid is pushed into the cornea, making it waterlogged and cloudy. Small cracks may occur on the inside of the cornea and this may also cause partial clouding. The clouding clears once the pressure is reduced.

**Watering Eyes** - Watering is a natural response to any form of irritation of the eyes. However in infantile glaucoma the tears flow excessively. This should improve when the pressure in the eye is controlled.

**Poor Vision and Jerky Eyes (Nystagmus)** - Occasionally, if raised pressure in the eye has caused clouding of the cornea or pressure on the optic nerve (the nerve that conveys sight to the brain), vision may be poorer than usual and there may also be slightly jerky movements of the eye. After treatment, most of these symptoms improve.

**Squint (strabismus)** - In some children the eye with poorer vision may be seen to turn inwards, towards the nose, or outwards.

**See to it!** - If you notice any of the above symptoms, take immediate action by consulting your eye specialist.

**NB:** Glaucoma can also occur following an eye injury or cataract surgery.



## Pigment Dispersion Syndrome (PDS) / Pigmentary Glaucoma

### What is it?

In PDS, black pigment granules clog the trabecular meshwork, which is the drainage gutter that takes fluid away from the eye. Because this prevents fluid from draining properly, there is a build up of pressure inside the eye, which in some cases damages vision. PDS occurs as a result of the shape of the iris (the coloured part of the eye). Normally the iris is shaped like a plate. In PDS, the iris falls back like a hammock. This causes the pigment layer on the back of the iris to rub against the structures that lie behind it. This rubbing action releases pigment particles into the eye.

### Who gets it?

1. Genetics: There is a tendency for this condition to be inherited.
2. Myopes (nearsighted persons): it is uncommon in hyperopes (farsighted persons)
3. Men develop pigmentary glaucoma 2-3 times as often as women.

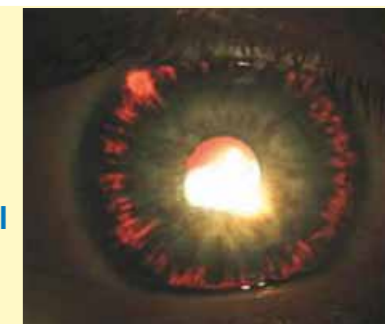
### How does it affect my eyes?

About 10 - 20% of people with PDS will develop glaucoma. It is the most common type of glaucoma in persons under age 40. Because most people with PDS are younger, and don't get checked for glaucoma routinely, it is all too common for the diagnosis to be made after one eye has become blind or lost significant vision.

Furthermore, sudden pigment release at the time of pupillary dilation or after bouncing-type exercise, such as jogging or basketball, may produce sudden and marked rises in IOP by overloading the trabecular meshwork with pigment. Your doctor will discuss with you if you are at risk for this and advise you appropriately.

### Are there special treatment considerations for PDS?

1. Eye drops.
2. Laser: Different types of laser procedures can be used in patients with PDS. This will depend upon the specific shape of your iris and the amount of pigment in your eye.



## Professional Education Programme Accepting Enrolments

Glaucoma New Zealand's 2011 Professional Education Programme is now open for enrolments.

This Programme is delivered entirely on-line and is now in its seventh year. During this time over 1,100 people have participated, many returning each year to gain valuable CPD points. While mainly directed at optometrists, the Programme is open to any of those in the eye health field, including nurses, orthoptists, and technicians.

The Glaucoma New Zealand Professional Education Programme is approved by the Optometry Board CPD Committee for 7 Clinical Diagnostic Credits upon completion of the course and success in the examination. Up to sixteen hours commitment over the year is involved.

Glaucoma NZ will provide a Certificate of Participation or a Certificate of Achievement depending on whether or not you sit and pass the multiple choice examination posted on the website early September.

For a full explanatory letter and enrolment options please visit [www.glaucoma.org.nz](http://www.glaucoma.org.nz)

## Stem Cells in Glaucoma

Iowa State University researchers have developed a new technique that successfully treated blindness caused by glaucoma in an animal model.

A six year project has been carried out by Iowa State University researchers investigating experimental models of glaucoma. The work was presented at a meeting of the Association for Research in Vision and Ophthalmology Conference.

The researchers previously determined that in glaucoma there is increased production of proteins with neuron-protective capabilities (neurotrophins) in an attempt to shield against blindness.

Once researchers realised the nature of these self-protective mechanisms, they tried to mimic the same thing exactly.

They used bone-derived stem cells from the patient, modified them to produce the neurotrophin and injected these cells into glaucomatous eyes.

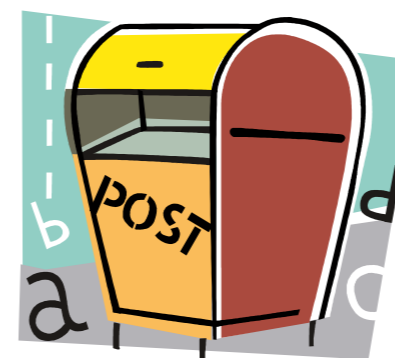
A sophisticated computerised analysis of noninvasive measurements of optic nerve function and the retina's electrical activity showed dramatic improvement in the experimental glaucoma after the procedure.

Four years earlier, the researchers had conducted experiments in which biodegradable polymers coated with neuroprotective substances were inserted into animal eyes with experimental glaucoma. As the polymer degrades, the neuroprotective substance is released into the eye. The approach worked well, however, because polymer-based drug delivery generally lasts for only months and glaucoma destroys vision in humans over a period of decades, the scientists shifted their strategy to a longer-lasting approach. They genetically modified the bone marrow stem cells for transplantation so the delivery of the neuroprotective protein can be achieved for years.

Researchers noted that one of the really unique aspects of this approach is they can isolate these stem cells from the same individual being treated. This eliminates the ethical issues associated with embryonic stem cells, and the immunological problems of graft rejection. The results were phenomenal, and hopefully in a few years this treatment may be able to be used in humans.

Story Source:

*The above story is sourced from ScienceDaily with editorial adaptations by Glaucoma NZ.*



## Public Mail Box

**I have a problem with my eyes watering constantly – it is worse after putting my glaucoma drops in – but regardless of this I do have a problem with watering eyes. What causes this, and can anything be done?**

Watery eyes are a common problem especially as people age. Various things conspire to make eyes water. Firstly when the eyes are irritated they will water. For instance when cutting onions. Glaucoma drops are not made with onion extract but they are chemicals and try as the pharmaceutical industry may, the drops can irritate and be a source of watering.

If severe the only recourse may be to stop the drops and try a different one - in consultation with the ophthalmologist of course.

Very common eyelid problems also cause irritation watering. The eyelid problem most frequently responsible is blepharitis. In blepharitis the eyelid glands become colonised with bacteria and the oils made in the glands assume a heavier grade i.e. become waxy. An easy approach to settling problems from this source is to hold a hot flannel to the lids which has the effect of melting the waxes accumulating in the glands and cleansing the eyelids.

Sometimes a mild antibiotic drop or course of oral antibiotics can help.

The next major group of problems that can cause a watering eye relate to inadequate drainage of tears. The tear duct that takes tears from the eye to the nose may have become blocked.

This is a surprisingly common problem. Also the lids may have become so slack and toneless with age that they turn out - this is called ectropion and can be fixed with surgery, as can a blocked tear duct.

**How good will my child's eyesight be after treatment for glaucoma?**

It is extremely difficult to give a definite prediction of how good a child's eyesight will be after treatment, especially when the child is very young. Many children with glaucoma who have been treated do have excellent vision in adult life and many of them have effectively normal vision.

However, the most important thing is control of the intraocular pressure and then, following that, further treatment if necessary with glasses and patches to ensure the vision develops normally. As the child grows older the eye specialist will have a better idea of how good their long-term vision will be.

Following successful treatment, it will be necessary for the child to return to the eye specialist at regular intervals for check-ups. Children with glaucoma need to have life-long monitoring of their condition.

## Moving House?

Don't forget to advise Glaucoma NZ of your new address.

Please send feedback and suggestions for Eyelights to the Editor.  
Questions for the Public Mailbox are welcomed.

## Public Meetings



Glaucoma NZ's **free** public meeting programme has already begun with meetings in Thames, Nelson, Whangarei and Palmerston North. These meetings are extremely popular and informative so plan to attend when there is one in your area.

Future meetings are being planned for Havelock North, Kapiti, East Auckland, Auckland Central, Invercargill, New Plymouth, Warkworth, Taupo, South Auckland. Visit [www.glaucoma.org.nz](http://www.glaucoma.org.nz) for details. Glaucoma NZ members will receive personal invitations for meetings in their area.

These meetings are open to any member of the public wanting to know more about glaucoma – invite your family and friends to attend.

See you there.



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Use the enclosed order form to order your Entertainment Book now and not only will you receive over \$15,000 in valuable offers, valid to 1<sup>st</sup> June 2012, but you will also help raise vital funds for the ongoing work of Glaucoma NZ.

You can also order online – please visit [www.glaucoma.org.nz](http://www.glaucoma.org.nz)

## OUT & ABOUT



### World Glaucoma Week 6th to 12th March

'World Glaucoma Week' is set aside internationally and is dedicated to raising awareness of this 'silent' eye condition. Glaucoma NZ staff supported the event by setting up a display booth with resources at the Greenlane Eye Clinic to coincide with the various eye clinic times.

This proved to be a great way to talk to many patients, their family members, medical and nursing staff, raising awareness of glaucoma and encouraging membership to Glaucoma NZ.

## Eyelights



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## Suggested ways you could help Glaucoma NZ help you:

- Continuing your most welcome and appreciated donations.
- Arrange a community fundraising event in your area.
- Contact us to arrange for a glaucoma educator to speak at your club/organisation or workplace.
- Purchase an Entertainment Book.
- Suggest to your work colleagues that they hold a special day or event to support our charity.
- Think of us when preparing or updating your Will.
- Tell everyone about Glaucoma NZ and its services.

## New Year Appeal Saving Sight through Education

**WE NEED YOUR HELP** to maintain and extend our educational initiatives in an effort to reach all New Zealanders with vital information.

- Public Meetings Nationwide
- Community Presentations
- Information Resources including
  - **“Your Eyes”** a comprehensive booklet on glaucoma and general eye health
  - **“Putting in Eye Drops”** helpful tips card
- Eyelights Newsletters
- Continuing Education Programmes for Eye Health Professionals

Please help us invest in a future without blindness from glaucoma.



**THANK YOU** for your continuing generosity – every donation counts!

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Donations of \$5.00 or more are tax deductible and will be received.

**YES!** I would like to receive more information about:

- Donating on a regular basis by Automatic Payment
- Leaving a bequest in my Will to Glaucoma NZ
- I have already included Glaucoma NZ in my Will

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