

Eyelights



The Newsletter of Glaucoma NZ
Volume 7 | Issue 1 | March 2010

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Galileo Had Glaucoma!

It has been 401 years since Galileo first had the idea of pointing his telescope to the heavens.

His interest in telescopes (an invention attributed to a Dutchman) began for their military application and their commercial value. The astronomical science only occurred to him later and he was not the first as an Englishman, Thomas Harriot, drew the contours of the moon in July 1609 but gets no credit as he did not publish his work.



Galileo first found evidence that proved the earth was not the center of the solar system when he found the four larger moons of Jupiter, and that Venus has phases just like our moon. These were seemingly simple things but in 1609 they turned science and the Catholic Church upside down. He did this with a telescope that was of poorer quality and less magnification than a cheap pair of modern binoculars.

Galileo's eyes were not ideal. His left eye was very short sighted and his right eye had less than perfect distance vision which meant they could never see together. His eyes pointed in different directions which is shown in many existing portraits. He was reported to have poor vision, thought to be due to looking at the sun, but his writings show that he was aware of the dangers of this and observed sunspots by projecting the sun's image onto a screen. This is a technique still commonly used by astronomers today. His weaker, divergent left eye may have helped him draw Jupiter and Venus as it was focused close to him while his right eye observed the heavens through a telescope.

Experts agree that Galileo had progressive glaucoma. There is a study being undertaken by Paolo Galluzzi, director of the Institute and Museum of The History of Science, in Florence, Italy to undertake glaucoma DNA studies from Galileo's remains that were reburied in 1737 (his first grave was that of a pauper due to his being out of

Continued over page...

favour with the Catholic Church). He never married but did have three children so any descendents may have a family history of glaucoma.

Galileo is credited with applying scientific discovery of facts through evidence which is the same principle used in research into glaucoma and all the eye drop treatments you may be using. No glaucoma treatment reaches an eye unless it has had rigorous studies proving that it works with similar confidence to the knowledge that the sun is the centre of our solar system.

Glaucoma Worldwide

The worldwide prevalence of glaucoma is increasing. This is due in part to the rapidly aging population. It is estimated that in 2010 the number of people in the world with primary glaucoma will be 60 million, with over 8 million suffering from bilateral blindness.

In developed countries, fewer than 50% of those with glaucoma are aware of their disease. In the developing world, the rate of known disease is even lower. Whereas about 10% of open-angle glaucoma patients are bilaterally blind, the figure for angle-closure is about 25%. Hence, more people are blind from angle closure, even though it is far less common.

Interestingly, the type and severity of glaucoma varies across the world.

New Zealand/Australia (European descent)

The most common type of glaucoma in New Zealanders of European descent is open angle glaucoma. This type of glaucoma has no symptoms until very late in the disease. It is estimated that 10% of people over the age of 70 and 2% over the age of 40 have glaucoma. It is the leading cause of preventable blindness.

Maori

Interestingly, glaucoma is almost non-existent amongst Maori. The reason for this is unknown but it is an exciting observation that there are a group of people who have some genetic features that protect them from glaucoma.

Asia

Asia accounts for a disproportionate amount of the glaucoma burden: 60% overall and 80% of angle-closure. In angle-closure glaucoma the drainage canals get blocked resulting in the eye pressure rising very quickly. The reasons for this disparity are unclear, although angle closure can be partly explained by anatomic features: shallow anterior chamber, narrow angle, smaller eye. Hence, angle closure glaucoma is more common in females and patients of older age.

Eskimos

Studies amongst Alaskan Eskimos have shown that open angle glaucoma is rare but there is a higher occurrence of angle closure glaucoma. In particular older Eskimo women are at high risk for developing angle closure glaucoma.



African Heritage

Open angle glaucoma affects those of African heritage more. It occurs about five times more often in African-Americans, and blindness from glaucoma is about six times more common. In addition to this higher frequency, glaucoma often occurs earlier in life - average about 10 years earlier than other ethnic populations. Although the reasons for these findings are unknown, researchers are becoming more and more certain that those of African heritage are genetically more susceptible.

Hispanic

Open angle glaucoma is more common among U.S. Hispanics than previously thought and is the leading cause of blindness. A study in Los Angeles reported that glaucoma is four times more common in Latin Americans and that 75% were not aware that they had the disease.

Scandinavians

Exfoliation glaucoma is a subtype of the disease that is caused by a condition called exfoliation syndrome. Small bits of whitish material flake off from cells in the eye and get stuck in the eye's drainage system, leading to increased pressure. Scandinavians have the highest rates of exfoliation syndrome in the world. People with Icelandic, Russian, Jewish, Irish, Middle Eastern, Indian and Japanese ancestry also have high rates of exfoliation syndrome. A variation in one gene called LOXL1 accounts for more than 99% of cases of exfoliation glaucoma, probably by increasing the risk of exfoliation syndrome. These variations in LOXL1 do not increase the risk for any other type of glaucoma.

Australian Aborigines

Interestingly, Australian Aborigines have exfoliation **syndrome** (they have the whitish material in their eye) but do not get exfoliative glaucoma. The reason for this is not known.

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 all 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. It relies solely on donations, sponsorship, grants and fundraising. All the information available to you from Glaucoma NZ is free.

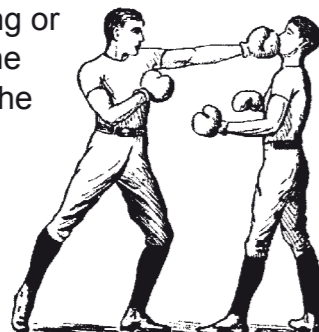
Traumatic Glaucoma

What is traumatic glaucoma?

Traumatic glaucoma is any glaucoma caused by an injury to the eye. This type of glaucoma can occur both immediately after an injury to the eye or years later. It can be caused by injuries that “bruise” the eye (called blunt trauma) and injuries that penetrate the eye. Conditions such as severe near sightedness, previous injury, infection or prior surgery may also make the eye more vulnerable to a serious eye injury.

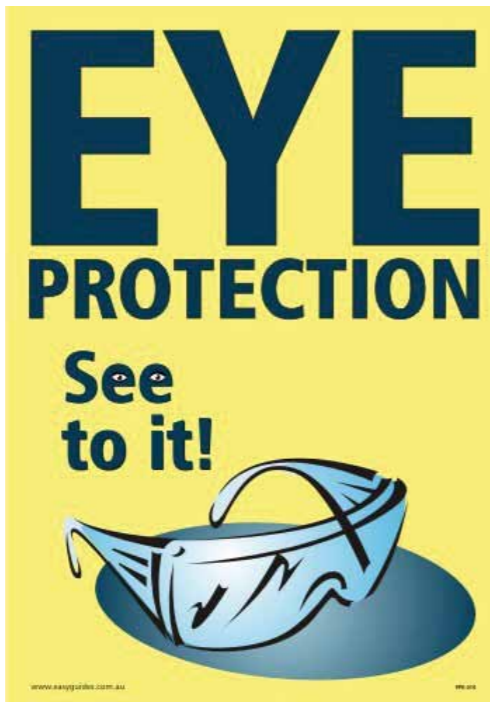
Blunt Trauma

As a result of an immediate injury, traumatic glaucoma is most commonly caused by blunt trauma, which is an injury that doesn't penetrate the eye, such as a blow to the head or an injury directly on the eye. The most common cause is from sports-related injuries, such as boxing or baseball. Normally, the eye fluid flows out of the front part of the eye through the pupil and then is absorbed into the bloodstream through a meshwork of drainage canals around the outer edge of the iris. When a blunt trauma occurs, damage to this system can occur. The most common cause is the ciliary body, the part of the eye that produces eye fluid, inside the eye tearing.



This can cause bleeding inside the eye. The excess amount of blood, plasma and debris can accumulate and clog the drainage system. This can lead to an increase in eye pressure, which can damage the optic nerve.

Elevated eye pressure due to blunt trauma is treated by keeping the eye pressure at safe levels while the eye drains the excess blood out. Glaucoma medications to control the eye pressure are usually tried first. If this is not sufficient to control the eye pressure, surgery may be necessary.



The elevated eye pressure following blunt trauma is temporary in most cases. It is important however, to make sure to get regular follow-up eye examinations. In some cases, the damaged drainage canals in the eye can build up excess scarring. This scarring blocks fluid flow and can lead to glaucoma. This type of glaucoma, called angle recession glaucoma, can occur many years after the initial injury. The angle recession is seen on an examination as a tear at the base of the iris where the drainage canals are. Angle recession glaucoma can be difficult to treat. Treatments can include medications that reduce fluid production in the eye, laser surgery or filtering surgery.

Penetrating Eye Injury

Traumatic glaucoma can also be caused by penetrating injuries to the eye, such as those caused by a sharp instrument or flying debris. The eye pressure is usually lower right after the injury occurs. Once the wound is closed, tissue inside the eye can become swollen and irritated, and bleeding can occur, causing the eye pressure to rise.

Short term rises in eye pressure are controlled in ways similar to cases of blunt trauma. However, damaged tissue and scarring from a penetrating eye injury can lead to blocked drainage canals. Glaucoma due to a penetrating eye injury is best treated by preventive measures when the initial wound occurs. Corticosteroid therapy to help prevent

tissue damage and scarring and antibiotics are an important component of initial treatment. Initial treatment can also include surgery to remove excess eye fluid or reduce swollen tissue.

If glaucoma does develop over the long term, medications that reduce the production of eye fluid are usually the first method of treatment, followed by filtering surgery.

Reader's Story

The Changing Face Of Glaucoma

By Allan Nicholson



I believed that glaucoma is a disease that only affects the elderly. Well I have since learnt otherwise. After being involved in a car accident 10 years ago causing a blow to the left side of my head I have been battling with glaucoma ever since.

My name is Allan and I am 34 years old, a businessman with two wonderful young children, one more on the way and a great wife.

I had an upper Molteno drain inserted into my left eye eight years ago and over the last eight months I have had trabeculectomy surgery followed by additional surgery two weeks later due to my body rapidly healing the trabeculectomy trap. I then had a revision of the Molteno drain but after all this, the pressure in my left eye still continued to rise. However, over the last three months my pressure has seemed to stabilise and my eye

“This article is adapted from the website of the Glaucoma Research Foundation in San Francisco, California www.glaucoma.org. Used by permission and protected by copyright.”

Caution – we should all wear protective glasses far more often in work and play to prevent unnecessary injuries.

feels good, although it is very cloudy due to my cornea being damaged. If my pressures remain under control for the next three months, I will be having a partial cornea replacement surgery in my left eye. I have had around eight injections into my eye over the last eight months. Lucky for me, my right eye is not affected!

I am very grateful to my ophthalmologist together with the specialist team for all the support and help that has been given to me throughout my treatment.

I would encourage anyone who has glaucoma to talk to others with glaucoma who will know what they are going through.

I now know that glaucoma is a disease that can affect children right through to the elderly. I have also learnt that glaucoma is not only hereditary, but as in my case can be caused by an accident. It is my goal, along with my very supportive wife Sally, to make as many people as possible aware of glaucoma and how it can affect not only your life, but the lives of your loved ones.

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.

Glaucoma and Air Travel

Air travel rarely has any effect on intraocular pressure (IOP). Because the air pressure within the cabin is carefully regulated as the plane ascends and descends, there is little change in eye pressure.




However air travel does affect the volume of gases in the air. This may be of relevance to those who have recently had retinal surgery. At the time of surgery, a gas bubble is placed in the eye to help keep the retina in place. The bubble is usually present for 6-8 weeks. Changes in altitude may cause the gas bubble to expand and cause increased IOP. So those people who have had a gas bubble inserted during retinal surgery are usually advised to avoid air travel for the following couple of months.

In contrast, gas bubbles are not used for glaucoma surgery, so people with glaucoma usually do not have air travel restrictions after surgery. However, it is always best to consult with your eye doctor before travelling, especially after any kind of eye surgery.

Because air in the cabin can become dry, artificial tears may be helpful for use when flying, especially on a long flight. Carry your glaucoma medication onboard with you. This will prevent any missed doses associated with delays, lengthy flights, or lost luggage. Also, make sure the bottle caps are tightly sealed to prevent leakage.

Happy travelling.

Putting In Eye Drops

1. Wash your hands.
2. Start by tilting your head backward while sitting, standing, or lying down. It is a good idea to stand in front of a mirror, or lie down and look directly at the ceiling. With your index finger placed on the soft spot just below the lower lid, gently pull down to form a pocket. 
3. Let a drop fall into the pocket.
4. Slowly let go of the lower lid. Close your eyes gently - try not to shut them tight. This may push the drops out of your eye.
5. *Gently* press on the inside corner of your closed eyes with your index finger for two or three minutes. This will help keep any drops from getting into your system through the tear duct, and will keep them in your eye, where they are needed. 
6. Blot around your eyes to remove any excess.
7. If you have more than one drop prescribed wait at least 5 minutes before putting in the second one.


Helpful Hints

- Have a daily routine and stick to it. Try storing your eye drops near your toothbrush or tea pot.
- If you don't see well but need to distinguish between different eye drop bottles put a rubber band around one of them so you can feel the difference.
- If you are unsure about whether the drops are getting in your eye, store your drops in the fridge. You will feel the coolness when they go in.

Your Eyes and Bicycle Tyres

If you enjoy riddles here is one for you:

What do your eyes and your bicycle tyres have in common?

The answer is they are both inflated. Bicycle tyres are pumped up to give you a nice soft ride and your eyes are pumped up in order to keep them the correct shape, i.e. spherical. If your eyes weren't - firstly, you wouldn't see very well and secondly, every time you rubbed them they would collapse and buckle. You can actually test this inflation by pushing gently on your eyes through your upper eyelid; they give a little under your finger tip, a bit like a squash ball. Where they differ from your bicycle tyres is that your eyes are filled with fluid and your bicycle tyres are filled with air. Just as with tyres, there is a correct pressure to which eyes should be inflated. That is probably where the analogy ends, except to add that if your eye specialist wants to measure the pressure inside your eye (a practice called tonometry), they may want to use a similar technique to the one most of us use to test the pressure in our bicycle tyres. 

To explain. Obviously the most accurate method of measuring the pressure is by the direct approach; in the case of the bicycle tyre that involves removing the valve cap and connecting a pressure gauge to the valve. But because our eyes don't come equipped with valves, the direct approach is more difficult and measuring the pressure directly involves sticking a needle into the eye, then connecting it to a device called a manometer. Not something that would exactly encourage people to get their intraocular pressures checked on a regular basis! Clearly there has to be an indirect method that provides a reliable result without too much trauma or drama for that matter. That is where the bicycle analogy comes in again. It turns out there are two methods of measuring the intraocular pressure that are remarkably similar to the way we test our tyres before heading off into the cycle lane; namely pressing our thumb into it (the fancy word for this is indentation) or seeing how flat the tyre looks on the ground (the fancy word for this is applanation). There are both indentation and applanation tonometers. The indentation type (the best known version is the Schiotz tonometer), relies on measuring how far a small weight will indent an anaesthetised cornea. Obviously the further it indents, the lower the pressure; hence the thumb analogy. However indentation tonometry is not considered to be very accurate and has been largely superseded. It is still used in some parts of the world, but not so much in New Zealand.

The applanation technique on the other hand, is usually regarded as the gold standard. It relies on the principle that if you were to flatten the anaesthetised cornea, you would need to use more force if the intraocular pressure was high than if it were lower, to achieve the same area. So by measuring the force required to flatten a standard area of cornea we have a measure of the intraocular pressure. Think how much easier it would be to push a soft basketball against a window to make a flattened area compared to producing the same area with a fully inflated one. Those of you who remember physics from school will recall the pressure law; pressure equals force over area.

So next time you take off on a trip with your shopping basket strapped to the front of your velocipede, or you are preparing your racing bike for the Coast to Coast, spare a thought for those of us who are working away in cramped, dark consulting rooms measuring pressures of a different sort.

Saving Sight with Professional Education Enrol Now!

Glaucoma New Zealand's Professional Education Programme is now open for registrations for the 2010 year. The Programme is in its sixth year and has had over 1000 enrolments during that time, with many participants 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 orthoptists, nurses and technicians.

Maria Pais, an Optometrist working in Henderson says the following, "I have found the Glaucoma NZ Education Programme to be exceptionally beneficial to my professional development in several ways. Glaucoma is highly researched and new thoughts and insights are always being considered and studied. This programme helps me to keep up to date with what is happening in the area of glaucoma and as a resource to tap into, is easily accessible and highly accurate. There are great explanations within the in-depth case studies. Furthermore, I am able use this evidence based resource in the application of my knowledge and skills through everyday practice in dealing with my patients. I find the multi-choice examination to be intellectually engaging and a good way to test if I have remembered what I have read – without feeling like I'm at university again!

Also it is a great way to get therapeutic points when you are based overseas. In fact while overseas a few years ago, it was the easiest, drama-free way for me to get lots of CPD points and feed my appetite for knowledge!

Thanks Glaucoma New Zealand!"

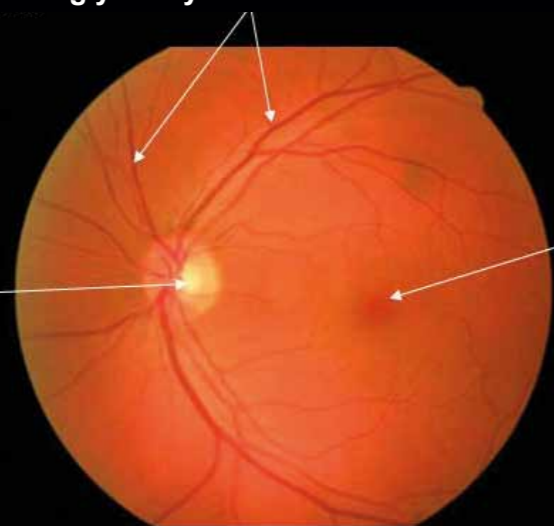
For further details and to enrol visit the GNZ website www.glaucoma.org.nz or phone 0800 452 826.

What Does the Doctor See Inside Your Eyes?

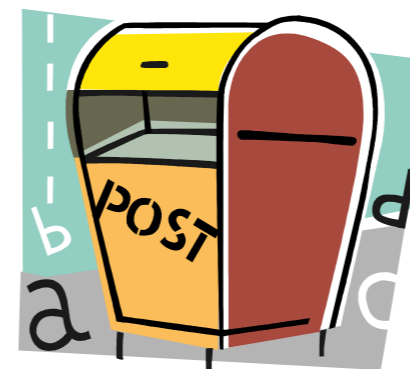
The eye is the only place in the body that blood vessels can be viewed directly:

Signs of diabetes, high blood pressure and high cholesterol can be seen during your eye examination.

The optic nerve carries everything you see to the brain. Conditions such as glaucoma, multiple sclerosis, and even brain tumours can be detected by changes in the optic nerve.



The macula provides your central, sharpest vision. Macular Degeneration, a sight threatening condition, affects this area of the retina.



Public Mail Box

What do I do with my eye drops that need to be refrigerated when I am travelling?

This depends on the circumstances of your travel. If you are travelling in room temperature environments for short periods this should not make a difference. It would be wise to protect the drops from extreme high temperatures as you might expect from direct sunshine. The inside of an aeroplane is cool and the storage holds are very cold so this doesn't pose a problem.

How do I deal with the travel time differences and keeping up with taking my eye drops at the right times?

This relates to those who change time zones. Don't worry about it too much. So long as you get back into a regular pattern as soon as you arrive at your destination. During travel you are either going to have to condense or extend the time interval between drops depending on which way you are travelling.

Is there anything I can do or take to prevent my eyes from feeling sore and gritty in the aeroplane?

Dry eyes are a common complaint of air travellers due to the low humidity of aircraft cabins. The cornea is the transparent front window of the eye and is the part of the eye that sparkles. The transparency of the cornea is maintained by keeping the front surface of the cornea moist, each time your eye blinks the cornea is recoated with a thin film of tears. Because the cornea is transparent it must take its oxygen straight from the atmosphere avoiding the need for blood vessels.

The air on board passenger aircraft is very dry and this is compounded for those with glaucoma due to the astringency of the glaucoma eye drops. The use of a preservative-free artificial tear drop of any brand and a preservative-free eye gel is recommended. The gel is ideal for times of resting when the slight blurriness caused by the gel is tolerable. Gel preparations keep the cornea moist for longer than the drops. The eye drops will be better in situations when you are undertaking demanding visual tasks such as reading and don't want the eyes to be blurred. This is good advice for all air travellers who suffer dry eyes not just those with glaucoma.

The next step is to travel on a passenger aircraft that has a natural climate. For this we have to wait for the arrival of the Boeing 787 Dreamliner. When it is delivered it will have a higher pressure cabin made possible by the increased strength of its hull and it will have a much more comfortable climate.

ASB extends a helping hand

Glaucoma NZ is proud to announce that ASB has increased its support of GNZ which will include helping with our awareness and fundraising initiatives. Watch out for our July Awareness Campaign promotion and donation boxes in ASB branches nationwide.

ASB has been operating in New Zealand since 1847 and currently has 140 branches nationwide. Supporting local communities has always been important to ASB and we are looking forward to working with them.

Thanks ASB.

Public Meetings 2010

Glaucoma NZ's **free** nationwide public meeting programme has already started with meetings in Whakatane, Taupo and West Auckland.

These meetings are extremely popular and informative so plan to attend when there is one in your area.

Upcoming Meetings:

17th April – Wanganui – 10 am

Kingsgate Hotel, The Avenue,
379 Victoria Avenue

26th June – Rotorua – 10am

The Shambles Theatre, (behind Pak'n'Save),
8 Amohau Street

24th July – Auckland Central – 10am

Alexandra Park Function Centre,
Greenlane Road West, Greenlane

Future meetings are being planned for Gisborne, Hamilton, Lower Hutt, Tauranga, Christchurch and Dunedin.

Visit www.glaucoma.org.nz for details.

Glaucoma NZ members will receive personal invitations.

These meetings are open to any member of the public wanting to know more about glaucoma.

Invite your family and friends to attend.

Entertainment™ Books

A great gift for family and friends – something for everyone!



The Entertainment™ Book is a restaurant and activity guide that provides hundreds of 25-50% off, and 2-for-1 offers from many of the best restaurants, cinemas, hotel accommodation and attractions throughout Auckland, Waikato and Bay of Plenty, Wellington, Christchurch and Dunedin as well as Australia.

Glaucoma NZ receives a donation from every book sold.

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 1st June 2011, 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

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.

P.S. If you are looking at holding a fundraiser, please don't hesitate to contact us to discuss ideas and promotional material we have to enhance your event.

Thank You So Much!

Your generosity in continuing to support Glaucoma NZ is deeply appreciated.

We know that 2009 was not an easy year for many so we are indeed very grateful.

Nearly \$32,000 was raised from your Eylights donations last year which is a fantastic result.

So once again,

Thank You So Much.

Moving House?

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

July 2010 Annual Awareness Appeal

PARTICIPATE in our July Annual Awareness Appeal.

We would appreciate your **HELP**.

Raise Funds - hold a special day at your club or workplace, or with a group of friends.

Raise Awareness - share your glaucoma story with us and others.

Please Phone 0800 452 826 or email info@glaucoma.org.nz

We look forward to discussing your ideas with you.

OUT & ABOUT

World Glaucoma Week 8th to 14th March

The Glaucoma NZ team were out and about during World Glaucoma Awareness Week having an information stand at Auckland's Greenlane Hospital Eye Clinic.

Information on glaucoma and GNZ's services was provided to patients and general hospital staff.

It was a great opportunity to further raise awareness of glaucoma.

New Year Appeal Saving Sight through Education

PLEASE join us in the fight against blindness from glaucoma. 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
- Workplace and Community Seminars
- New Information Resources
 - **'Your Eyes'** a comprehensive booklet on glaucoma and eye health
 - **'Putting in Eye Drops'** helpful tips card distributed through pharmacies
- Eyalights Newsletter
- Eye Health Professionals Continuing Education Programme

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

THANK YOU for your continuing generosity – every donation counts!

YES! I would like to make a donation.

\$100 \$50 \$30 \$20 \$_____ (other)

Name _____

Address _____

_____ Postcode _____

Phone No _____ Email _____

I enclose my cheque made payable to Glaucoma NZ

Please debit my credit card Visa Mastercard

Name on Card _____

Card No _____

Expiry Date ____ / ____ Signature _____

I will direct credit Glaucoma NZ's ASB bank account
12-3013-0180964-00

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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Moving House?

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