Glaucoma Australia
Saving sight

Glaucoma News

Winter 2025 / Issue 97

Our vision is for Australians to be free of glaucoma blindness

Navigating Life with Glaucoma

Written by Glaucoma Australia

Glaucoma is more than just an eye disease - it's a life-altering condition that slowly changes the way people interact with the world. Often dubbed the "silent thief of sight," glaucoma typically progresses without noticeable symptoms until significant vision has already occurred. In fact, many people go for years without realizing they have it because peripheral (side) vision fades slowly and subtly.

It's one of the leading causes of irreversible blindness worldwide and although the condition progresses slowly, its impact on daily life can be significant.

There are different types of glaucoma, including open-angle glaucoma (the most common form) and closed angle-closure glaucoma, which is more acute and painful. Until a cure is found, vision loss cannot be restored.

For the more than 80 million people worldwide living with glaucoma, including over 350,000 Australians, adapting to the challenges of this chronic condition requires resilience and a proactive mindset.

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From the CEO

Dear friends and supporters,

Firstly, I would like to humbly thank you for your generous support of our annual Tax Appeal. The funds we raised together will continue to fuel our SiGHTWiSE patient support and education program to help ensure that more Australians living with glaucoma can access these continuing and connective care services for life.

As an organisation that currently receives no government funding, your support is vital and enables us to expand our services such as our free support line 1800 500 880 and educational resources available in 100+ languages.

We have included an interesting mix of articles in this issue including our cover story on navigating life with glaucoma, how AI is transforming detection and the findings of a recent study that found that higher levels of HDL cholesterol were associated with a heightened risk of glaucoma.

In conclusion, I would like to express my heartfelt gratitude for the unwavering support of our donors, corporate partners, and the glaucoma community.

Your invaluable contributions make it possible for us to sustain and expand our services, ensuring that we can continue to meet the needs of those who rely on us.

Without your support, much of the progress we've made would not be possible.

Sincerely,

Adam Check
Chief Executive Officer

Navigating Life with Glaucoma

Continued from page 1

People living with glaucoma may experience a range of visual changes and challenges, including:

- **Peripheral Vision Loss:** Most people with glaucoma first notice a loss in peripheral (side) vision, which can make everyday tasks like walking in crowds, driving, navigating stairs, or spotting obstacles more difficult.
- **Difficulty with Low Light:** Many people with glaucoma struggle to adjust between light and dark environments.
- **Increased Risk of Falls:** Reduced depth perception and peripheral awareness raise the chances of bumps, bruises, or falls—especially in older adults.

Beyond the physical challenges, living with glaucoma can deeply affect emotional well-being and mental health, often leading to experiences such as:

- **Anxiety and Fear:** The progressive nature of the disease and the fear of total blindness weigh heavily on many individuals.
- **Depression:** Studies show that people with vision impairment are at a higher risk of depression and social isolation.
- **Loss of Independence:** Activities like reading fine print or driving may no longer be possible, especially in advanced stages.

Although there is no cure for glaucoma, it can be managed effectively. The earlier it is detected, the better the chances that disease progression will slow down, which in turn improves quality of life.

Most patients commence treatment with prescription eye drops to lower their eye pressure. Drops must be administered consistently as set out in the ophthalmologist's treatment plan - missing doses can hasten vision loss.

In some cases, procedures like trabeculoplasty, laser therapy, or tube shunt surgery may be necessary to reduce pressure.

Regular eye examinations and lifelong monitoring of the optic nerve are essential to help track disease progress and alter treatment plans where necessary.

Coping Strategies and Support

As glaucoma is a life-long chronic condition that needs to be managed, people diagnosed with it are encouraged to access the various sources, products and services to improve daily life.

These include adjustments to your home environment such as better lighting, contrast strips on stairs, and decluttered spaces to reduce hazards and avoid injury and low vision aids like magnifiers, large-print books, and voice-activated technology can help maintain independence.

Living with glaucoma isn't just about managing vision; it's also about managing uncertainty. That's why emotional support is just as important as practical advice.

Common concerns include anxiety about future vision loss, frustration over lifestyle limitations, and depression linked to reduced independence and social isolation. This is why mental health support is crucial, especially after diagnosis or major lifestyle changes.

Joining a support group or accessing emotional help services through Glaucoma Australia's free SiGHTWiSE program can help tremendously.

Hope Through Innovation

Research and exciting developments into early detection, neuroprotection, and gene therapies offer hope to those living with glaucoma.

These innovations include AI-based screening and diagnostic tools to help detect the disease earlier, saliva test kits to assess one's risk of developing glaucoma, and sustained drug delivery systems which reduce the need for daily drops.

Recent investments in gene therapy and optic nerve regeneration hold great promise to not only slow down vision loss but also restore lost sight. This cutting-edge research and global effort mean that the future looks hopeful.

If you or a loved one is living with glaucoma, know this: you are not alone. With today's treatments, support networks, and emerging technologies, many people continue to lead vibrant, independent lives despite the diagnosis.

Need Support?

You can reach out to our qualified Orthoptist Patient Educators on 1800 500 880 for clinical advice, practical help and emotional support or visit glaucoma.org.au.

Too Much 'Good' Cholesterol Raises the Risk of Glaucoma

Written by Insight News

In yet another example of too much of a good thing being bad for you, researchers in China have discovered that 'good' cholesterol may mean a heightened risk of glaucoma.

And the large observational study, published in the British Journal of Ophthalmology, says 'bad' (LDL) cholesterol, usually regarded as harmful to health, may be associated with a lower risk of the eye disease.

A release associated with the research said the findings "challenge perceived wisdom about what may help and hinder eye health and suggest that a rethink may be needed of how patients with high blood fats and who are at risk of glaucoma, are treated."

Glaucoma is projected to affect around 112 million people by 2040. Risk factors include age, ethnicity, the build-up of pressure within the eye (IOP), and family history, explain the researchers, from the Zhongshan Ophthalmic Center at Sun Yat-sen University in Guangdon, China.

Abnormally high levels of circulating fats (lipids) in the bloodstream have been linked to eye conditions, such as macular degeneration and diabetic retinopathy.

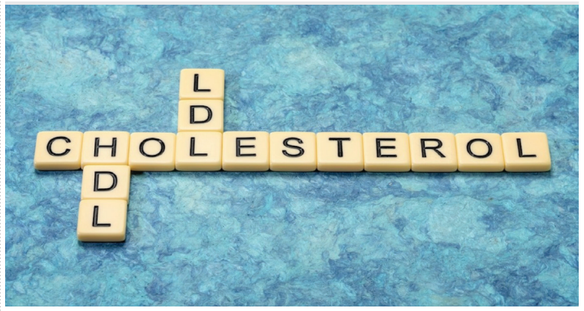
Recently published research has also implied a link with glaucoma, but the findings have been inconsistent, and it's not clear which type of lipid might be most influential, they add.

The researchers drew on 400,229 participants aged 40 to 69 in the UK Biobank Study. Their health was tracked for an average of 14 years, during which time 6868 (nearly 2%) of them developed glaucoma.

Compared with participants who didn't develop glaucoma, those who did, tended to be older, and of non-white ethnicity. They had higher HDL, the 'good' cholesterol, but lower LDL and a higher waist-to-hip ratio (indicative of central obesity).

They were also more likely to be ex-smokers, and to be taking statins, and they had a higher prevalence of diabetes, high blood pressure, and cardiovascular disease.

But **analysis of the blood test results showed that higher levels of HDL cholesterol were associated with a heightened risk of glaucoma** while higher levels of LDL cholesterol, total cholesterol, and triglycerides were associated with a lower risk.



Those with the highest level of HDL cholesterol in their bloodstream were 10% more likely to develop glaucoma than those with the lowest level, with every (standard deviation) increase associated with a 5% higher risk.

Similarly, participants with the highest levels of LDL cholesterol and triglycerides were 8% and 14%, respectively, less likely to develop glaucoma than those with the lowest levels.

And each (standard deviation) increase in LDL cholesterol, total cholesterol, and triglycerides lowered the risks by 4%, 3%, and 4%, respectively.

But these observed associations only persisted among those older than 55, with no significant association seen in those aged 40–55; the findings were also influenced by sex and type of glaucoma.

The researchers said: "*These findings challenge existing paradigms about 'good' and 'bad' cholesterol in relation to eye health. This could prompt a re-evaluation of lipid management strategies in patients at risk for glaucoma.*

"HDL cholesterol has been regarded as the 'good cholesterol' for seven decades. However, this study demonstrates that high levels of [it] are not consistently associated with a favourable prognostic outcome.

"Further studies are needed to investigate the mechanisms behind these associations."

Eye Implant Technology could Revolutionize Glaucoma Treatment

Written by the National Reconstruction Fund Corporation (NRFC)

The NRFC has joined the fight to combat irreversible blindness and has committed $27 million to PolyActiva as part of its $40 million Series C round.

PolyActiva is a Melbourne-based biotechnology company developing a potentially revolutionary eye implant technology to treat glaucoma.

This investment supports cutting-edge Australian research with the potential to transform treatment outcomes for millions living with glaucoma worldwide.

The funding will enable PolyActiva to expand and consolidate its operations into a single facility encompassing R&D, analytics and manufacturing, grow its highly skilled workforce, and complete its phase 2b clinical trial.

NRFC CEO David Gall said, "*There are currently more than 80 million people worldwide suffering from glaucoma, and this number is expected to increase to over 111 million people by 2040.*

PolyActiva's ground-breaking technology is being developed with the hope, in the future, to provide those facing this debilitating disease with an alternative treatment regime that will vastly improve their quality of life while reducing the treatment burden on medical providers."

Glaucoma is a chronic and progressively worsening eye disease that primarily results from increased intraocular pressure, which over time exerts damaging force on the optic nerve–the crucial structure responsible for transmitting visual information from the eye to the brain. If left untreated or poorly managed, this continuous pressure can lead to the gradual deterioration of the optic nerve fibres, causing permanent and irreversible vision loss.

Often referred to as the "silent thief of sight," glaucoma typically develops without noticeable symptoms in its early stages, making regular eye examinations essential for early detection and effective intervention.

Less than 50% of glaucoma patients consistently use daily eye drops over time which leads to increased risk of vision loss. PolyActiva's Prezia's technology emerged from research conducted

at the CSIRO, Bionics Institute and Centre for Eye Research Australia.

This exhibits the potential of Australian medical innovation and its ability to improve the lives of millions of people around the world. Prezia enables precise, consistent, customisable, and effective delivery of ocular therapies for glaucoma and other eye diseases.

"The NRFC's investment in PolyActiva allows the company to expand its highly skilled workforce to support local manufacturing of its drug delivery technology.

PolyActiva's implant technology has unique manufacturing requirements, so this investment helps to develop local capability and diversity in the pharmaceutical value chain, providing cascading benefits for Australia's research, innovation and commercialisation ecosystem," Mr Gall said. In addition to its treatment for glaucoma, PolyActiva has the potential to deliver a variety of other intra-ocular treatments including the antibiotic levofloxacin.

If successful, the treatment could reduce the risk of infection for patients that have recently undergone cataract surgery eliminating the need for peri-operative treatment and post-operation eye drops.

The NRFC's investment is being made alongside Brandon Capital, Australia's leading biotech venture capital firm, and comes as PolyActiva expands its commercial presence in the United States.

PolyActiva's Australian CEO Vanessa Waddell said, *"Inspired by Cochlear's journey that leveraged Australian research to restore hearing to millions, PolyActiva is on our mission to reduce glaucoma-related vision loss globally.*

This investment by the NRFC will help us do that, ensuring that we can complete our phase 2b clinical trial and prepare for phase 3 registration trial which will take us one step closer to a potential new therapy for glaucoma."

NRFC Chief Investment Officer Dr Mary Manning said, *"The NRFC's cornerstone investment in PolyActiva will anchor the company's current funding round alongside Brandon Capital, helping to crowd-in the additional funding that it needs.*

This is a great example of Australian innovation becoming a real-world solution that could improve millions of lives. The NRFC is proud to back PolyActiva and support the development of this breakthrough technology here at home."

About PolyActiva

PolyActiva is a Melbourne headquartered clinical-stage biotechnology company pioneering a novel drug delivery technology designed to improve treatment outcomes for patients with ocular conditions.

PolyActiva's proprietary technology platform, PREZIA™, enables precise, consistent, customizable, and effective delivery of ocular therapies, aiming to address unmet needs in glaucoma and other eye diseases.

The company's lead product candidate, PA5108, is a biodegradable, latanoprost-releasing ocular implant offering a sustained alternative to traditional eye drop therapy for patients with glaucoma. For more information, visit polyactiva.com

Artificial Intelligence (AI): Revolutionizing the Early Detection and Management of Glaucoma

Written by Glaucoma Australia

Glaucoma, frequently referred to as the "silent thief of sight," remains one of the primary causes of irreversible blindness across the globe. This condition often progresses without noticeable symptoms in its early stages, typically beginning with the gradual loss of peripheral vision.

Early detection of glaucoma is paramount, as vision loss due to the disease is irreversible. AI facilitates this by automating the analysis of complex data, reducing human error, and providing consistent results. Moreover, AI models can predict disease progression, allowing for personalized treatment plans and timely interventions.

In recent years, artificial intelligence (AI) has emerged as a transformative force in the field of ophthalmology, particularly in glaucoma care. Advanced AI algorithms, powered by large data sets and deep learning, are now capable of analyzing retinal images, visual field tests, and optical coherence tomography (OCT) scans with remarkable precision.

These technologies not only enhance the accuracy and efficiency of glaucoma diagnosis but also enable earlier detection—often before clinical symptoms even arise.

Furthermore, AI-driven tools can assist clinicians in monitoring disease progression, personalizing treatment plans, and predicting outcomes, ultimately improving patient care, preserving vision on a broader scale, and improving quality of life.

AI's Role in Detecting Glaucoma

AI, particularly machine learning (ML) and deep learning (DL), has demonstrated exceptional performance in analyzing complex ophthalmic data. These technologies are being applied to various diagnostic modalities, including optical coherence tomography (OCT), fundus photography, and visual field tests.

- **OCT Imaging:** AI algorithms are increasingly capable of analyzing OCT scans with remarkable precision, enabling the detection of subtle structural changes in the retinal nerve fiber layer (RNFL)—often before these changes are visible to the human eye.

  The RNFL is a critical layer of nerve fibers that transmits visual information from the eye to the brain, and its thinning is one of the earliest indicators of glaucomatous damage.

  By identifying minute variations in RNFL thickness and patterns across successive scans, **AI can flag potential cases of early-stage glaucoma, even in asymptomatic patients**. This early detection capability allows for more proactive intervention, helping slow disease progression and preserving vision.

- **Fundus Photography:** AI models are trained to identify glaucomatous changes in fundus images, such as optic disc cupping, a structural change in the optic nerve head that often indicates glaucoma. In glaucoma, the "cup" (a central depression in the optic disc) becomes larger compared to the "disc" (the entire optic nerve head), a change that suggests damage to the optic nerve.
- **Visual Field Tests:** AI algorithms are designed to analyze visual field data by detecting even the slightest variations in vision loss patterns that might be overlooked during standard testing. These algorithms can assess large volumes of data quickly and with greater precision.

  As a result, AI improves the **sensitivity**—the ability to correctly identify those with glaucoma—and **specificity**—the ability to correctly identify those without the disease. This leads to earlier, more accurate diagnoses and reduces the risk of false positives and negatives, ultimately allowing for more timely interventions and better management of the disease.

Global Initiatives and Challenges

When it comes to advancing glaucoma care through AI applications, international collaborations are pivotal.

However, the implementation of AI in clinical settings can be challenging, requiring high-quality, diverse datasets and the integration of AI tools into existing healthcare infrastructures.

Addressing these challenges is essential for the widespread adoption of AI in glaucoma care.

In Australia, institutions like the Centre for Eye Research Australia (CERA) are at the forefront of integrating AI into glaucoma care. Researchers

at CERA are developing deep learning systems to screen for glaucoma and other eye diseases, aiming to improve early detection and access to care, particularly in remote and underserved communities.

Conclusion

AI is rapidly redefining the landscape of glaucoma care, offering unprecedented capabilities in early detection, accurate diagnosis, and individualized disease management. By leveraging advanced imaging analysis, predictive modeling, and automated interpretation of complex ophthalmic data, AI empowers clinicians to intervene earlier and more effectively—often before patients experience noticeable symptoms.

While challenges such as data diversity, clinical integration, and regulatory standards must still be addressed, the potential benefits of AI in preventing irreversible vision loss are immense. As global research efforts and technological innovation continue to evolve, AI stands poised to play a central role in the future of ophthalmology, helping to safeguard vision and improve outcomes for millions at risk of glaucoma worldwide. ●

Power List Recognises Ophthalmologists Down Under

Written by Mivision

Professors Jonathan Crowston and Keith Martin from Australia, and Professor Helen Danesh-Meyer from New Zealand have been listed in The Ophthalmologist Power List 2025.

Each year readers of The Ophthalmologist are asked to nominate individuals "whose influence and achievements are a continuing source of inspiration and admiration among their peers".

Nominations are judged by an international panel and this year, for the first time, the top 50 candidates were divided into five categories: cataract and refractive, glaucoma, retina, research, and innovation.

The Australian and New Zealand ophthalmologists secured three positions among the top ten in the glaucoma category.

Professor Helen Danesh-Meyer is the Sir William and Lady Stevenson Professor of Ophthalmology, University of Auckland, New Zealand. Prof Crowston is Professor of Ophthalmology, University of Sydney, and Prof Martin is the Ringland Anderson Professor and Head of Ophthalmology, University of Melbourne, and Managing Director, Centre for Eye Research Australia.

A United Approach

When The Ophthalmologist asked each of the Professors, "What advice would you give to your younger self?", they all emphasised the need to challenge "strongly held beliefs" and to be collaborative.

"The most exciting developments in glaucoma are happening at the intersection of disciplines – vascular biology, neuroscience, architecture, engineering, optometry – all have something to contribute," said Prof Danesh-Meyer.

"Think globally – connect with biotech start-ups, industry, government agencies and funding bodies early to drive real-world impact."

Encouraging *"young researchers and clinicians to embrace collaboration"*, Prof Martin said, *"The future of glaucoma treatment will not come from a single discovery but from the intersection of multiple fields – ophthalmology, neuroscience, genetics, and bioengineering.*

Some of the most exciting progress is happening at these boundaries, and those willing to work across disciplines will help redefine what is possible". ●

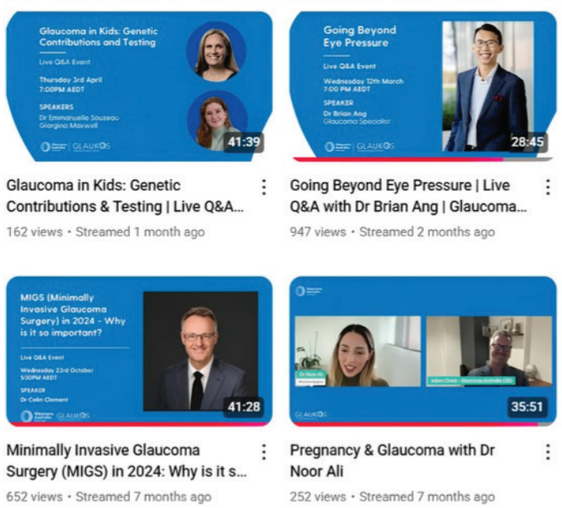
Remi's Story (by mum)

My daughter Remi is 11 months old and born with Congenital Glaucoma.

She has had 10 surgeries so far in her young life and each holds the promise of more possibilities for her vision and future. She is under the wonderful care of doctors at the children's hospital; they are so amazing with her!

We had no idea she had glaucoma until she was born, it has been a tough road so far and I know the future will not be easy for her or us as her parents, but we are doing everything we can to ensure she can live her life to the fullest. ●

Missed out on our Live Events – you can still watch them on You Tube at youtube.com/@GlaucomaAustralia/streams



Glaucoma Australia SiGHTWiSE Program

Let's get SiGHTWiSE

Glaucoma Australia's SiGHTWiSE patient support program offers FREE education, guidance and support to people living with glaucoma.

If you or someone you care for has been diagnosed with glaucoma, join our supportive community, and enjoy the sight-saving benefits of being SiGHTWiSE.

Enrol today

www.glaucoma.org.au/sightwise

Call our free support line

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Q&A

Live Q & A with Dr Brian Ang - Going Beyond Eye Pressure.

Dr Brian Ang is a Melbourne-based glaucoma specialist, clinical researcher, and co-founder of Nutravision. He has over 70 peer reviewed publications, with research interests in novel surgical treatments and neuroprotection for glaucoma. Dr Ang is a keen advocate of 'proactive glaucoma care' – the proactive management of risk for glaucoma and glaucoma suspect patients through natural lifestyle measures and nutrition.

Q How much nicotinamide should I take on a daily basis?

A People ask me that almost every day. In the first clinical trial that found that diamite benefited people with glaucoma they found that you had to take 3,000 milligrams of nicotinamide daily however this is a very high dose and the first trial was only for six weeks.

I think taking 3,000 milligrams for six weeks was probably okay but over the long run it may be better to take a smaller amount of nicotinamide.

If you're going to be taking it over the long term, I advise my patients to take between 500 milligrams to 1,000 milligrams every day and that's because that's the clinical dose that has been shown in clinical trials for skin that helps with skin health.

My rationale is that if a dose of 500 milligrams can help with skin health it should also be able to help with glaucoma over the long term. The main reason why I hesitate to get my patients to take 3,000 milligrams over the long term is because it could potentially cause issues with the liver.

Q In terms of drinking tea is that with or without milk and caffeinated or decaf?

A The studies are actually quite clear that it doesn't matter what type of tea you drink. They have found that people who only drank decaffeinated tea actually did not receive the neuroprotective benefits.

So, I guess the main difference with tea and coffee is that coffee has probably too much caffeine compared to tea so it's okay to drink any blend of tea that you choose.

Q What is your opinion about ocular acupuncture. Dr Rosen Fa in the USA is a strong advocate for this procedure.

A With acupuncture the principle behind that treatment is quite different to the principles of glaucoma treatment in Western medicine. With acupuncture it is about making sure that your health meridians are balanced and it really depends on the individual.

The acupuncturist might find that your liver meridian or your kidney meridian is not balanced so they would recommend doing acupuncture at certain pressure points to help to relieve and rebalance the meridians. So, I guess from a medical perspective what it does is, potentially helps with production or relaxation of the muscles around the eye to reduce stress levels; and potentially that means better neuroprotective effects for the optic nerve.

I personally do not have a lot of experience with that, but I have no problems with any of my patients saying that they want to do acupuncture for their eye health . ●

Our Supporters

We rely on the generosity of our corporate partners & donors to continue to fund our critical services. Your support is greatly appreciated.

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Bequests

We respectfully accepted the kind legacy gifts of:

The Estate of the Late Leonard Albert Smith

The Estate of the Late Jean Violet Robb

Leave a lasting legacy

Leaving a gift in your Will is an incredibly forward-thinking way of giving that will benefit glaucoma patients for generations to come – your family, friends and neighbours who may be diagnosed in the future.

After looking after your loved ones, any gift is greatly appreciated and allows us to plan ahead, to invest in the research that will one day find a cure and continue to support and care for families impacted by glaucoma.

If you are considering leaving a gift in your Will to Glaucoma Australia, you can reach out to our Fundraising Manager for a confidential conversation on 1800 500 880 or via email at betty@glaucoma.org.au.