Glaucoma Australia
Saving sight since 1986

Glaucoma News

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Our vision is for Australians to be free of glaucoma blindness

Challenging Glaucoma with Emerging Therapies

Written by Glaucoma Australia

Glaucoma is a group of eye conditions that gradually damage the optic nerve and can progress without obvious warning signs. Because vision loss is often detected late, **glaucoma is a leading cause of irreversible blindness** worldwide and continues to impact millions of people.

Fortunately, research and innovation are reshaping the landscape of glaucoma care. From new drug therapies to advanced surgical techniques, emerging approaches aim to slow or halt disease progression more effectively, reduce treatment burden, and improve quality of life for patients.

This article provides a comprehensive overview of the **most promising advancements in glaucoma treatment**.

Understanding the Challenge

Traditional glaucoma management has focused on lowering intraocular pressure (IOP), the only modifiable risk factor shown to slow disease progression.

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From the CEO

Dear friends and supporters,

I am delighted to share the first edition of *Glaucoma News* for 2026 with you. This issue is filled with informative articles covering a wide range of glaucoma topics including emerging therapies and what you can do to make daily life easier.

World Glaucoma Week (8–14 March) is fast approaching, and our team is busy preparing a special line-up of guest speakers for our popular Live Q&A event series.

As Glaucoma Australia marks its 40-year anniversary, we reflect with pride on four decades of unwavering commitment to protecting sight and supporting people affected by glaucoma.

Since our beginnings, we have worked alongside patients, families, clinicians and researchers to raise awareness, improve early detection, advocate for better care and fund vital research.

This milestone is not only a celebration of how far we have come, but a moment to honour the many individuals and partners who have helped shape our journey.

Together, we look ahead with renewed determination to reduce the impact of glaucoma and preserve vision for generations to come.

Sincerely,

Adam Check
Chief Executive Officer

Challenging Glaucoma with Emerging Therapies

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This has historically been achieved through topical eye drops, laser procedures and conventional filtration surgeries.

While effective for many, these options have limitations including poor patient adherence, side effects, and variable long-term outcomes.

The need for better tools and therapies has driven intense research and innovation.

Novel Drug Therapies

Rho Kinase Inhibitors

Rho kinase (ROCK) inhibitors represent one of the most impactful recent advancements in glaucoma pharmacotherapy.

Unlike traditional medications that reduce aqueous humor production or increase outflow through conventional pathways, ROCK inhibitors

- Improve the drainage of fluid through the trabecular meshwork
- Reduce fibrosis (scarring) in ocular tissues
- May have direct neuroprotective effects

These mechanisms offer hope for improved pressure control, especially in patients where conventional therapies fall short.

Sustained-Release and Implantable Drug Delivery

One of the biggest challenges in glaucoma care is *medication adherence*. Daily eye drops can be difficult to maintain, especially in older populations.

Emerging sustained-release systems - including biodegradable implants and injectable depots - are designed to:

- Provide continuous therapeutic levels of medication
- Reduce the need for frequent dosing
- Improve patient compliance

These delivery systems can last weeks to months, reducing the daily treatment burden and stabilizing IOP more consistently.

Innovative Surgical and Minimally Invasive Options

Minimally Invasive Glaucoma Surgery (MIGS)

Over the last decade, MIGS procedures have transformed the surgical management of glaucoma by offering effective pressure reduction with faster recovery and fewer complications compared to traditional surgery.

These procedures typically involve:

- Tiny implants or devices that enhance aqueous outflow
- Approaches that spare surrounding ocular tissues
- Combination with cataract surgery, when appropriate

MIGS has expanded the treatment options for early-to-moderate glaucoma, particularly for patients who struggle with medications.

Next-Generation Filtration Techniques

For more advanced disease, next-generation glaucoma surgeries aim to:

- Create more reliable pathways for fluid drainage
- Minimize scarring and failure
- Promote long-term IOP control with fewer follow-ups

These include enhanced tube shunts, biocompatible scaffolds, and refined trabeculectomy techniques that improve surgical success rates.

The Promise of Neuroprotection

Glaucoma ultimately damages the optic nerve and retinal ganglion cells. Emerging research is exploring therapies that go beyond pressure reduction to protect or preserve neural tissue.

Potential neuroprotective strategies include:

- Antioxidants and mitochondrial stabilizers
- Growth factors to support nerve cell survival
- Cell-based therapies and stem cell approaches

Although still largely in early-stage development, these approaches represent a paradigm shift — focusing on guarding nerve health, not just lowering pressure.

AI and Personalized Medicine

Advances in artificial intelligence (AI) and big data analytics are enhancing glaucoma care by:

- Improving early detection through imaging analysis
- Predicting disease progression risk
- Personalizing treatment plans based on patient-specific profiles

AI-driven tools are increasingly capable of interpreting complex visual field tests and advanced imaging data, such as OCT scans, with a level of speed and consistency that can be difficult to achieve in routine clinical practice.

By identifying subtle patterns and early changes that may not be immediately apparent, these technologies can support earlier detection of glaucoma progression and help clinicians stratify risk more accurately.

As a result, eye care professionals are better equipped to make timely, evidence-based treatment decisions, personalise management plans, and potentially improve long-term outcomes for people living with glaucoma.

Patient-Centered Care and Digital Health

Emerging technologies are also enabling better long-term disease management through:

- **Remote monitoring tools**, such as home tonometry devices
- **Mobile apps** that track symptoms, adherence and medication schedules
- **Telehealth platforms** to connect patients with specialists

These innovations empower patients and improve communication with clinicians, which is vital for a condition that requires lifelong monitoring.

Looking Forward

While there is no cure for glaucoma yet, the **pace of innovation offers real cause for optimism**. Emerging therapies are redefining what's possible – from smarter drug delivery to advanced surgeries and novel neuroprotective strategies.

By combining these advancements with early detection and personalized care, clinicians and patients are better equipped than ever to slow disease progression and preserve vision.

As research continues and new treatments become available, the future may one day see glaucoma not just managed but truly challenged. Advances in neuroprotection, sustained-release drug delivery, gene and cell therapies, and precision medicine are shifting the focus from simply lowering eye pressure to preserving optic nerve health and slowing disease progression at its biological roots.

Combined with earlier diagnosis through improved imaging and digital technologies, these innovations offer hope for **more effective, personalised care** - bringing us closer to a time when vision loss from glaucoma can be significantly reduced or even prevented. ●

Transforming Glaucoma Detection

Written by Centre for Eye Research Australia (CERA)

Associate Professor Zhichao Wu's project to improve glaucoma diagnosis and treatment has been recognised as one of the nation's best.

Glaucoma is often referred to as the 'silent thief of sight' because many people don't realise, they have it until their vision has already been lost.

CERA Head of Clinical Biomarkers Research Associate Professor Zhichao Wu was working as a graduate optometrist when he first fully appreciated its impact.

"I found myself detecting eye disease that had already caused irreversible vision loss in people who had just come in for their routine eye test," he says. "It was terrible to me that we didn't have better tools to catch it early."

This motivated him to pursue glaucoma research with the goal of detecting the condition before significant irreversible vision loss happens.

While current glaucoma treatments are effective for many, around one third of people diagnosed with the disease still go on to lose vision.

This is because it is hard to accurately measure when the disease is worsening and to know when stronger treatments are needed.

The most common way to measure vision loss from glaucoma is a visual field test, which has a patient press a button when they see lights flash to find the edge of their sight.

However, it often takes multiple tests over years to measure just how quickly a person's vision is decreasing.

"We ultimately want to help clinicians provide more personalised management of patients by developing better ways of detecting glaucoma progression" says Associate Professor Wu.

"These tools are also critical for facilitating the discovery of treatments in glaucoma."

In 2024, the National Health and Medical Research Council (NHMRC) selected his research for 10 of the Best Research Projects publication, which celebrates Australia's top health and medical researchers.

New Approaches for Tackling Glaucoma

Associate Professor Wu's research received a boost in 2016 when he was awarded the prestigious NHMRC Early Career Fellowship.

Biomarkers are measures of biological processes that help diagnose conditions, understand the way diseases work, predict disease progression and evaluate treatment effectiveness.

His research sought to identify new biomarkers in glaucoma to improve how vision loss is prevented – and new treatments are developed – using advanced imaging and functional assessment techniques.

His research during the scholarship has made progress towards detecting glaucoma progression earlier and finding better methods of identifying those at highest risk of progression, which also supports personalised management of this condition.

Associate Professor Wu is collaborating with CERA's Opthalmic Neuroscience team to further his research.

They're harnessing the power of an advanced hyperspectral camera – that uses a spectrum of coloured light to image the eye – to help clinicians identify biomarkers of cells at risk of degeneration.

If these 'high-risk' patients can be identified, clinicians can then monitor them more carefully and get them the best treatment at the right time.

This research could also improve how clinical trials are run and **bring new treatments to people quickly**.

Because glaucoma typically progresses slowly, previous clinical trials have needed thousands of people over many years. However, Associate Professor Wu has managed to reduce the sample sizes of participants required for clinical trials by up to 20-fold using new methods and designs.

He is now extending this work by exploiting new technologies. *"By combining state-of-the-art*

OCT imaging with AI techniques, we aim to make glaucoma clinical trials even shorter and less costly to perform," Associate Professor Wu says.

Associate Professor Wu and his team are working hard to ensure these research innovations can be translated into meaningful improvements for people living with glaucoma.

"Through earlier diagnosis, faster identification of disease progression and paving the way for therapeutic innovation, we hope to make blindness from glaucoma a thing of the past," he says.

How Glaucoma Australia is Driving Progress in Glaucoma Research in Australia

Glaucoma Australia has a long history of investing in research to improve the understanding and treatment of glaucoma in Australia.

By supporting studies focused on earlier detection, better monitoring, and more effective treatments, we are strongly committed to reducing preventable vision loss and improving outcomes for people living with this chronic condition.

This research funding helps translate new ideas into practical advances in eye care, supporting innovation that can move from research settings into clinical practice.

In doing so, Glaucoma Australia also strengthens collaboration within the Australian vision research community and supports the next generation of researchers, helping to drive continued progress in glaucoma care.

How Glaucoma Affects Daily Life and What You Can Do to Make Life Easier

Written by Anna Delmadoros, Optometrist

Whether you're newly diagnosed or have been managing glaucoma for years, understanding its impact and learning practical strategies can help you **maintain confidence and independence**.

In its early stages, glaucoma often has no noticeable symptoms and has little immediate effect on daily life. As it progresses, activities that rely on peripheral (side) vision such as driving, walking in crowded or unfamiliar environments, and avoiding obstacles, can become more difficult.

Individuals may struggle with night vision, light sensitivity, reduced contrast sensitivity and adjusting to changes in lighting. The risk of falls and accidents increases. In advanced stages, central vision loss progressively impairs reading, recognising faces, managing household tasks and driving typically becomes unsafe.

Here are 10 tips to make living with glaucoma a little easier:

1. Stick to your treatment plan

Daily eye drops or medications may feel like a hassle, but they're essential for **preserving vision and maintaining quality of life**.

To stay consistent, sync taking medication with daily habits (e.g. meals or bedtime) and set reminders to stay on track.

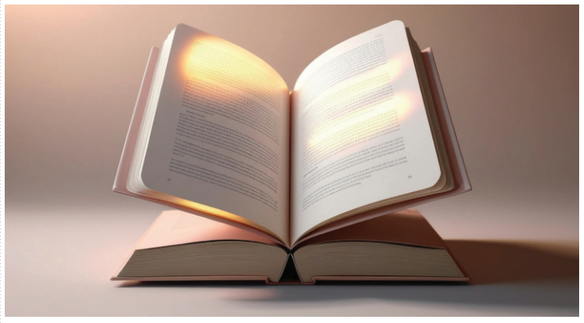
If instilling drops is difficult, consider using a drop aid. If your medication schedule feels complicated, talk to your treating ophthalmologist or optometrist about simplifying it.

Keep up with regular eye exams, even when the condition seems stable. Missing doses or appointments can accelerate vision loss.

2. Light it up

Use bright, glare-free and even lighting throughout your home. Ensure hallways, stairs and corners are well lit. Add task lighting - such as desk/floor lamps or under cabinet lights - for reading, hobbies or cooking.

Warm-toned lights may be more comfortable than cool options. Consider using night lights or motion activated sensor lights. Good lighting improves visibility, reduces eye strain and supports safe mobility.



3. Consider tinted lenses

Bright sunlight, car headlights and fluorescent lights may be bothersome. Ask your eye care team about suitable tint colours and darkness levels.

Wraparound frames, polarised lenses and UV coatings may help. Tinted lenses can also improve comfort and contrast.

4. Train your brain to scan

Use scanning techniques to scan surroundings and compensate for lost peripheral vision. Move your head slowly from side to side and up and down to catch what might otherwise be missed.

Scanning is a simple trick that improves safety and confidence when walking or driving.

5. Use visual aids and technology

If reading becomes difficult, increase font size and contrast on devices or use magnifiers, audiobooks, screen readers and large-print materials. Try large button remotes, smart home devices like talking appliances and voice activated assistants. If you're struggling, request referral to low vision services.

The right tools support independence and connection.

6. Make your home vision friendly

Use colour and contrast strategically e.g. white plate on a dark placemat, white cutting board for darker vegetables, dark soap dish on light countertop, dark plates for light-coloured foods.

Use high-contrast tape or paint to mark steps, doorways, furniture edges and handles.

Choose matte finishes and use sheer curtains over windows to reduce glare. Arrange furniture for clear easy movement, remove clutter and tripping hazards like cords and loose rugs.

Organise items in dedicated spots and keep frequently used items within reach. Install handrails or grab bars if needed.

This allows for improved visibility and ease of daily tasks, confidence moving around and fewer accidents. Create a space that works for you - not the other way around.

7. Stay active

Regular physical activity such as walking or swimming supports strength, balance, coordination and may help lower eye pressure.

Avoid activities that increase eye pressure (e.g. heavy lifting, head down yoga poses), wearing small tight swimming goggles and sports that carry a risk of eye injury.

Even short daily movement helps - try indoor walking or chair-based routines if mobility is limited. Check with your ophthalmologist or optometrist before starting a new exercise routine. Movement is medicine - it supports eye health, mood and reduces fall risk.

8. Build a support system

You're not alone. **Connect with support groups** like Glaucoma Australia or counselling services if you need help coping. Share your journey with friends, family and your eye care team and don't hesitate to ask for help. A supportive environment keeps you motivated and emotionally strong.

9. Plan ahead for outings

Vision changes can make getting around more challenging. If night vision is affected, travel during daylight. Choose well-lit, familiar routes when possible and allow extra time. Use navigation apps with voice guidance.

Pack essentials like sunglasses, a hat, magnifier or reading glasses, a small torch, and medication for longer outings.

Walk carefully in crowded or uneven areas and avoid distractions like talking on the phone or wearing headphones. A little preparation makes outings safer and more enjoyable.

10. Learn more

You don't need to be an expert, but **understanding your condition is important**. Ask your eye care team about your glaucoma type, stage and the purpose of prescribed medication.

If it helps, request printed instructions or resources and ask about new treatment/ research. Write down questions before appointments.

Knowledge reduces anxiety and confusion, improves treatment compliance and helps protect your vision.

A Final Thought

Glaucoma may change how you experience the world, but it doesn't have to define or limit your life. With support and a few adjustments, you can continue doing what matters most to you.

You are Never Alone on Your Glaucoma Journey

Remember our Orthoptist Patient Educators are here to guide you through your individual glaucoma journey.

We are here for you from diagnosis and for life, helping to navigate the challenges glaucoma brings so you can preserve your vision and live your best life.

Call our free helpline on 1300 500 880 (between 9am and 5pm AEDT, Monday – Friday) for a confidential conversation.

Frank's Story

I was diagnosed with glaucoma by a specialist at 65 after my optician found I had elevated eye pressure. Two years later I had a stroke in the optic nerve of my right eye, which greatly reduced my vision and took away my central vision also.

Piyadasa's Story

An optometrist detected glaucoma in both my eyes whilst performing an eye test for the purpose of selecting the right glasses.

The optometrist then referred me to an eye surgeon for treatment who observed that my glaucoma was at an early stage and went on to prescribe Bimatoprost and Brinzolamide eye drops to instill daily.

Q&A

Live Q & A with Dr Emmanuelle Souzeau and Giorgina Maxwell - Glaucoma in Kids: Genetic Contributions & Testing

Dr Emmanuelle Souzeau is a Genetic Counsellor and a Research Fellow, working with the Australian & NZ Registry of Advanced Glaucoma based at Flinders University.

Giorgina Maxwell is a Genetic Counsellor with experience working in clinical and research genetics, undertaking her PhD with Dr Souzeau.

Q How does genetic glaucoma in children differ from that in adults?

A Genetics in adults is a bit more complex. In children, glaucoma is often caused by a single gene, which can explain many cases of congenital or childhood-onset glaucoma. In adults, however, single genes account for only a small proportion of cases.

Most adult glaucoma still has a genetic component, but it usually results from the combined effect of many small genetic changes.

Each of these variants alone doesn't cause disease, but together they can increase a person's risk beyond the threshold for developing glaucoma. This means we approach testing, interpretation, and discussions with families differently than we do for childhood cases.

Q As a family member of someone with glaucoma, can I have genetic testing to see if my kids could be affected?

A Yes, we can arrange genetic testing for family members. However, the process should start with the person in the family who has glaucoma, so we can first determine whether there's an identifiable genetic cause in them.

The reason is that if we test another family member and find nothing, we can't tell whether it's because they didn't inherit the genetic change or because current testing methods simply can't detect it.

Each person inherits roughly half of their genes randomly from each parent, so differences between family members are expected. Not finding a specific genetic change doesn't rule out a genetic explanation - it may just mean that the cause hasn't been identified yet.

In such cases, further or updated testing in the future might be worthwhile.

Q Is it common to have genetic testing done and nothing found that indicates what causes the congenital glaucoma to occur?

A In most cases, we don't find a genetic cause. Currently, in about two-thirds of families, we don't have an explanation. This doesn't mean the glaucoma isn't genetic - only that, with the testing available so far, we haven't identified the cause.

The exact percentage can vary depending on the type of glaucoma, as some forms are easier to link to specific genetic changes than others, but on average it's around two-thirds. ●

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Bequests

We respectfully accepted the kind legacy gifts of:

The Estate of the Late Terence John Ingram

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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.