

Glaucoma



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Glaucoma

About glaucoma

Glaucoma is an eye disease that affects 2% to 3% of people over the age of 60. It is the second most common cause of blindness in the western world and the second leading cause of blindness worldwide after cataracts.

There may be no symptoms to glaucoma as it is often a silent disease slowly developing over time. It is often detected during a glasses assessment by a vigilant optometrist, or because a patient is aware of the risk and has chosen to have their eyes formally checked.

Early detection, through regular and complete eye exams, is the key to protecting your vision from damage caused by glaucoma.

How does glaucoma occur?

Glaucoma occurs when the intraocular pressure (IOP) within the eye is high enough to cause progressive damage to the optic nerve, resulting in vision loss.

A normal healthy optic nerve has about a million nerve fibres which come from the retina (the seeing membrane at the back of the eye). When glaucoma develops, these nerve fibres start to die off and if enough nerve tissue is lost, then the vision starts to be affected.

In the initial stages of glaucoma there is usually no noticeable change in vision but it has been estimated that during this time a patient can lose as many as half the nerve fibres in the eye and these cannot be regenerated.

Even when glaucoma deterioration does become more advanced, the loss of sight starts out in the peripheral part of vision and people are often unaware of it. Once it reaches the central vision and does become noticeable, glaucoma has already reached an advanced stage and cannot be reversed. While there is currently no cure for glaucoma, the condition can be controlled. Auckland Eye are specialists at supporting and treating those affected.



Normal vision



Vision with glaucoma

What causes glaucoma?

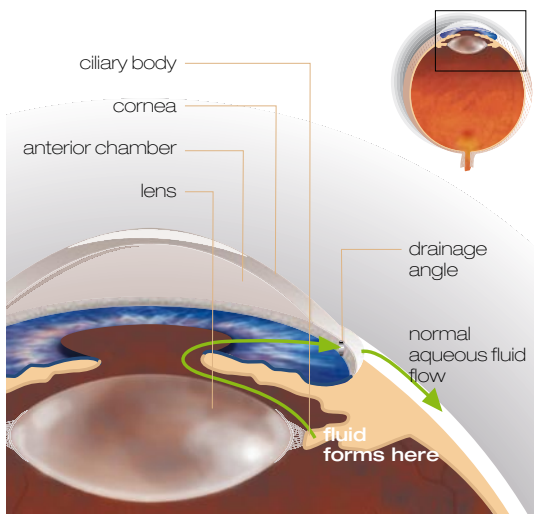
The causes of glaucoma include:

1. Elevated pressure in the eye (intraocular pressure)

The principal cause of glaucoma is high pressure in the eye which damages the optic nerve and nerve fibres. This pressure comes from a build-up of a naturally produced watery fluid (aqueous fluid) in the front part of the eye that provides nutrition to the tissues inside the eye. Pressure increases when there is an imbalance between the production and drainage of the fluid.

2. Structure and blood supply of the optic nerve

In some patients the eye pressure is within the normal range but they still develop glaucoma due to a sensitivity of the nerve structure or its blood supply.



Normal eye - aqueous fluid is produced in the ciliary body, passes through the pupil and exits through the drainage angle

3. Family history of glaucoma

Having an immediate relative (a parent, child or sibling) with the disease significantly increases the risk. Anyone with a family history should have regular checks from the age of 40.

4. Age

The incidence of glaucoma increases with age. Although, it can occur in babies and young people, it is much more common in people over the age of 60.

5. Other associated conditions

Other conditions may increase the risk of glaucoma such as high blood pressure, diabetes and myopia (nearsightedness).

How is glaucoma diagnosed?

There are a number of tests that can be performed to determine whether someone has glaucoma. These generally involve measuring the eye pressure, a test to measure peripheral (side) vision and assessments of changes in the optic nerve.



1. Tonometry

Tonometry measures the inner pressure of the eye providing an IOP (intraocular pressure) reading. Anaesthetic eye drops are used to numb the eye and then the doctor or technician uses a special device (tonometer) to measure the eye's pressure.

2. Gonioscopy

Gonioscopy is a painless eye test using a contact lens that checks to see if the drainage angle of the eye is normal.

3. Pachymetry

This is a simple, quick and painless test to measure the thickness of the cornea. It is important to assess this as it can have a bearing on the accuracy of eye pressure measurements.

Glaucoma Risk	
Thick Cornea + Normal eye pressure	--
Thick Cornea + High eye pressure	+
Thin Cornea + Normal eye pressure	+/-
Thin Cornea + High eye pressure	++++
Average Cornea + Normal eye pressure	--
Average Cornea + High eye pressure	++

- = *less risk*

+ = *higher risk*

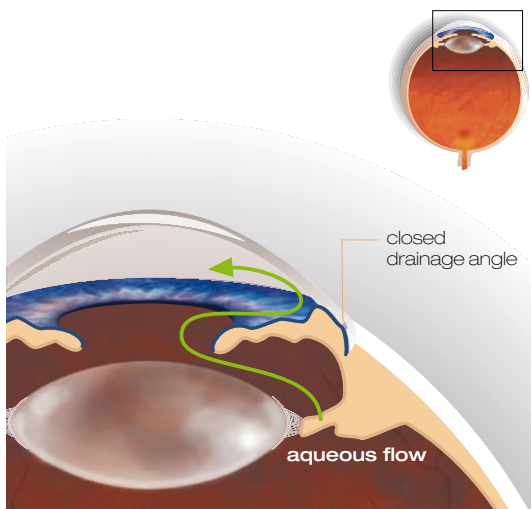
Average corneal thickness = *555 microns*

High eye pressure = *over 21 mmHg*

Normal eye pressure = *6 - 21 mmHg*

4. Perimetry (visual field testing)

Computerised measurements of a patient's peripheral vision are helpful to diagnose and to monitor glaucoma. During this test, the patient is asked to look straight ahead and indicate when they see a light appear in their peripheral vision. This test helps to draw a "map" of a patient's vision and any related gaps.



Closed angle glaucoma - the drainage angle is blocked and the aqueous fluid is unable to exit

5. Nerve fibre layer measurements

The thickness of the nerve fibre layer can be measured using a non-invasive imaging technique known as Optical Coherence Tomography (OCT). Like visual field testing, this can help in diagnosing glaucoma and also monitor its progression.

6. Optic nerve imaging

Obtaining baseline readings of the optic nerve, and repeating the tests regularly, is important as the doctor can then see if there are any changes over time. Photos and laser scanners are used to provide this information.

What are the types of glaucoma?

1. Primary open-angle glaucoma

This is by far the most common form of glaucoma and appears in two-thirds of all cases. In open-angle glaucoma the drainage area in the eye is open but not working properly and pressure slowly builds up, causing gradual loss of peripheral vision.



2. Normal tension glaucoma

This is where the pressure inside the eye is within the normal range but nerve damage still occurs in spite of this. This accounts for about 25% of glaucoma cases and is more common in Asian races and people who have migraine or blood circulation problems.

3. Angle closure glaucoma

This uncommon type of glaucoma is caused by a blockage in the pressure drainage system. It is the only type of glaucoma that can be painful and develops rapidly. Patients may notice a severe aching in the eye along with eye redness and blurring of vision. It can damage vision within a day or two so an urgent assessment is needed.

4. Secondary glaucoma

Secondary glaucoma can arise due to other eye problems such as inflammation, blood vessel blockages and trauma.

5. Congenital and juvenile glaucoma

Uncommon, this type of glaucoma can occur in babies, children or young adults and the treatment may be different from adult glaucoma.

Should I be screened for glaucoma?

Eyes should be examined regularly and people should be tested and screened for glaucoma in keeping with the following recommendations:

- People aged 40 to 49 years should be tested every five years
- People aged 50 to 59 years should be tested every three years
- People over the age of 60 should be tested every two years

Anyone with risk factors should be tested every year or two after the age of 40. Community optometrists are in the best position to offer this sort of screening.



How do I manage glaucoma?

The aim of treatment is to reduce the pressure (IOP) inside the eye, which will reduce stress on the optic nerve and slow down or stop any further nerve damage. If the pressure is brought down to a satisfactory level, then the risk of visual field loss is reduced.

1. Medical treatment

Eye drops are usually the first treatment for glaucoma. There are various eye drops that can be used and an eye specialist can recommend the one that is the most appropriate. It may be necessary to try several eye drops to find the one drop, or combination, that is best for you.

2. Laser for primary open angle glaucoma

A form of laser surgery called Argon Laser Trabeculoplasty (ALT) is a safe and straightforward treatment for primary open angle glaucoma. It is effective in about 70% of people but eye drops are usually required as well, to keep the pressure at a safe level.

3. Laser for narrow or closed angle glaucoma

Another form of laser surgery called YAG Peripheral Iridotomy (PI) surgery creates an



opening through the iris which allows the eye fluid to bypass the normal drainage pathway. This can reverse closed angle glaucoma and prevent its development in those who have narrow drainage systems and are at risk of acute loss of vision.

4. Surgery

Surgery can be used to control pressure inside the eye but is generally used only when eye drops have proven unsatisfactory.

Ongoing management

Once glaucoma is diagnosed, ongoing management and treatment is required throughout life. Like a lot of other conditions, such as blood pressure and diabetes, treatment is about controlling the disease but not curing it. If treatment is discontinued, then the glaucoma will progress again. Fluctuations in eye pressure are damaging, so it is very important to ensure that eye drops are taken regularly as missed doses can be harmful.

Glaucoma New Zealand

Glaucoma New Zealand is a non-profit organisation that provides support for New Zealanders with glaucoma. As a member you will receive regular newsletters with information about glaucoma and any new treatments that are becoming available. If you would like further information then please contact Glaucoma New Zealand:

www.glaucoma.org.nz

email: admin@glaucoma.org.nz

Tel : +64 9 373 8779

Fax: + 64 9 373 7947

For more information on glaucoma please contact our friendly specialist team.

Auckland Eye

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- modern day stay facilities for cataract and outpatient ophthalmic surgery
- state-of-the-art laser surgery for refractive errors
- appointments throughout the Auckland and Northland regions

Auckland Eye is dedicated to providing the highest quality service in a caring environment.

From our surgical team through to front desk staff we place your requirements and comfort first. Auckland Eye is the only private sector eye centre that has **Quality Health New Zealand** accreditation (QHNZ), for quality of patient care.

Centrally located in Remuera, near Newmarket, our main clinical and surgical facilities provide easy motorway access, off street parking and wheelchair access. Our expanding coverage includes dedicated facilities at the Apollo Clinic in Albany and surgical facilities at Shore Surgical in Milford. In addition to these we provide appointments at a wide range of locations throughout Auckland and north to Whangarei (see our website for locations).

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F.R.A.N.Z.C.O.

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- Albany



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B.Sc., F.R.A.N.Z.C.O.

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- Red Beach



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F.R.A.N.Z.C.O.

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F.R.C. Ophth.

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- Albany



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Dr Yvonne Ng

F.R.A.N.Z.C.O.

Appointments available at:

- Remuera
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- Albany



Dr Paul Rosser

F.R.A.N.Z.C.O.

Appointments available at:

- Remuera
- Albany



life-changing
ophthalmic care®

phone: (64) 09 529 2480

free phone: 0800 NEW EYES
(0800 63 93 93)

fax: (64) 09 529 2481

email: admin@aucklandeye.co.nz