

# Understanding Cataracts

YOUR JOURNEY TO CLEARER VISION



**BAUSCH + LOMB**

See better. Live better.



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## Vision and Ageing

Every day one simple action comes first, we open two little windows and start to take in a new day. With the precious gift of sight we experience all that is around us.

As we age, common tasks such as reading, driving (particularly at night) or using a computer become more difficult. This can be caused by a condition called presbyopia, which happens naturally to everyone as they age. Some people will also develop cataracts, a clouding of the eye's lens resulting in blurred vision.

This brochure will help you understand your vision and cataracts, treatment with surgery and intraocular lens options.

## How does the eye work?

When you look at an object, the cornea acts as a clear window on the front of your eye, transmitting and focusing light into the eye. The cornea performs two thirds of the focusing.

The lens in the eye, which sits behind the coloured iris, performs the remaining third of the focusing by working in a similar way to a camera lens, focusing light rays onto the retina at the back of the eye.

The retina then reads the light rays and sends the focused image to the brain via the optic nerve which allows you to see.

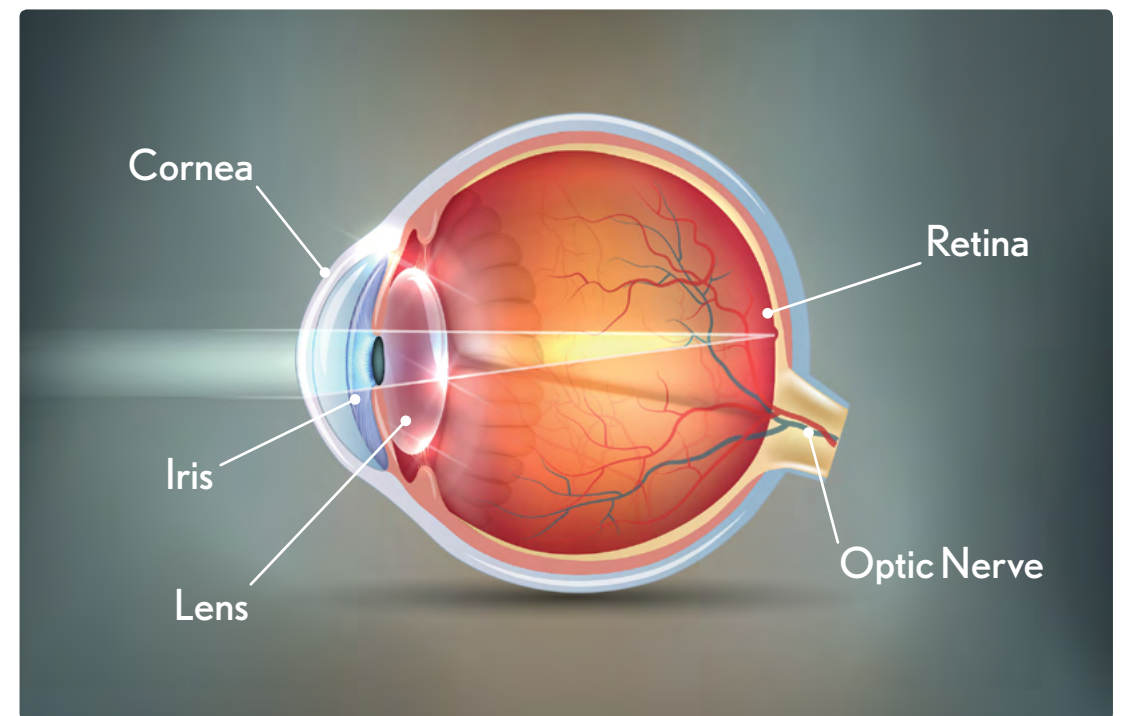


Diagram of the human eye

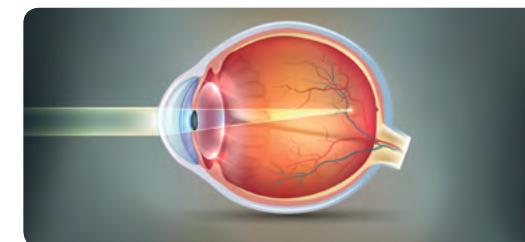


## Sources of common visual complaints

Even if you've never worn spectacles or contact lenses, chances are you know about nearsightedness (myopia), farsightedness (hyperopia) and astigmatism, all are types of refractive errors.

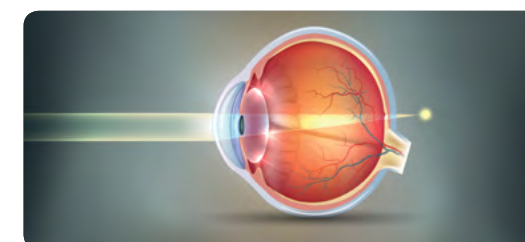
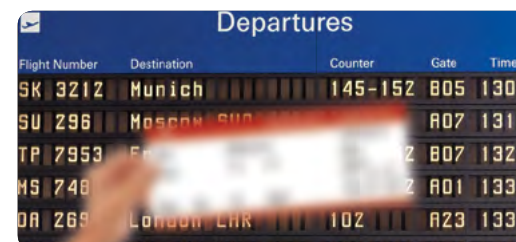
Refractive errors occur when the shape of the eye prevents light from focusing directly on the retina. The length of the eyeball (either longer or shorter), the shape of the cornea or ageing of the lens can cause refractive errors.

## Types of Refractive Errors:



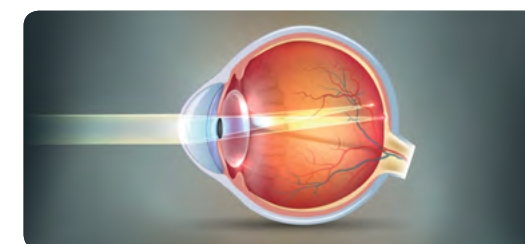
### Nearsighted

A condition where objects up close appear clearly, while objects far away appear blurry. With nearsightedness, light focuses in *front* of the retina instead of on the retina.



### Farsighted

A common type of refractive error where distant objects may be seen more clearly than objects that are near. Light focuses *behind* the retina instead of on the retina.



### Astigmatism

An irregularity in the curvature of the cornea in which light fails to come to a single focus on the retina to produce clear vision. Instead, multiple focus points occur, either in front of the retina or behind it causing vision to be blurred or distorted to some degree at all distances.



## How our vision can change with age

Just like our bodies, our eyes have different needs as we age and several common eye problems can occur. Presbyopia and cataracts are a normal, natural part of our eyes' ageing process.

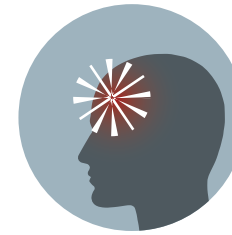
### What is Presbyopia?

Presbyopia is a natural occurrence where near vision becomes blurred, making it hard to focus while doing things like reading, using a mobile phone or working on the computer. It is not a disease or illness; but it usually affects everyone due to ageing.

### What causes Presbyopia?

Before the age of 40, the eye's lens is soft and flexible, readily changing shape to see images from different distances. With age, the natural lens in your eye hardens and loses elasticity. With this loss of flexibility your eyes are less able to adjust and focus on near objects.

### Common symptoms of Presbyopia:



Eye-strain or headaches after reading or doing close visual work



Needing brighter lighting when reading or doing close work



Difficulty reading small print or focusing on near objects



Holding reading material at an arm's distance to focus properly on it

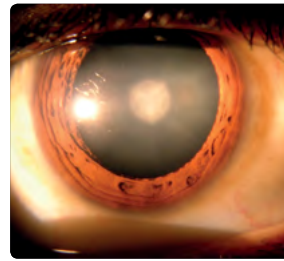
# What are Cataracts?

Cataracts are a clouding of the eye's natural lens.

When we look at something, light rays travel into our eye through the pupil and are focused through the lens onto the retina, a layer of light-sensitive cells at the back of the eye. The lens must be clear in order to focus light properly onto the retina. If the lens has become cloudy, this is called a cataract.



An eye with a typical clear lens



An eye with a cloudy lens caused by a cataract.\*

## Causes

Cataracts usually develop as a normal part of ageing. Most age-related cataracts develop gradually and can occur in one eye or both.

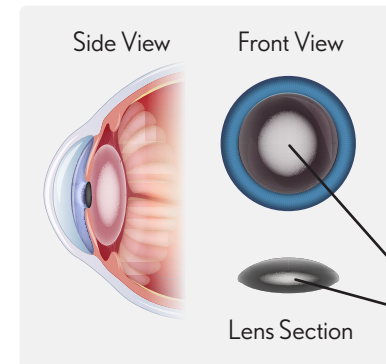
Cataracts develop when protein builds up in the lens of your eye and makes it cloudy. This keeps light from passing through clearly and can interfere with your vision.

Certain factors can accelerate the appearance and progression of cataracts these include:

- smoking
- prolonged exposure to ultraviolet light
- various diseases such as diabetes
- trauma
- medication e.g. prolonged cortisone use

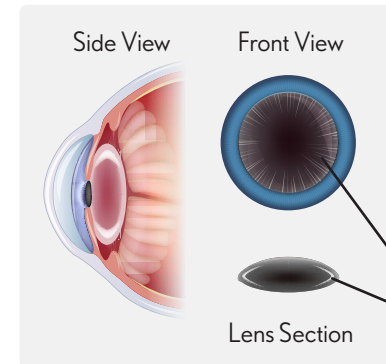
# Types of Cataracts

There are different types of cataracts classified by the location of the opacity. These include:



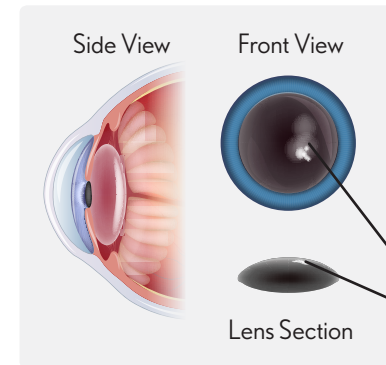
## Nuclear Cataracts

Nuclear cataracts develop in the centre portion of the lens, known as the nucleus and are the most common.



## Cortical Cataracts

Cortical cataracts are wedge-shaped and form around the edges of the nucleus. These opacities grow towards the centre of the lens in a spoke-like fashion.



## Subcapsular Cataracts

Subcapsular cataracts occur at the back of the lens and often occur in people with diabetes.

Other types of cataracts include, but are not limited to: congenital, secondary (caused by medications or diseases) or traumatic cataracts.



A simulation of vision with and without cataracts.

## Symptoms

In the early stages you may not notice changes in your vision in good lighting but may experience difficulty driving at night or with vision in dim light conditions. These symptoms often develop gradually over months or years.

As the cloudiness spreads across the lens it becomes more difficult to see clearly. The most common symptoms of cataracts are:

- Cloudy or blurry vision
- Sensitivity to light and glare, halos may appear around lights
- Increasing difficulty with vision at night or in dim light
- Colours seem faded
- Frequent prescription changes in your glasses or contact lenses
- Double vision

**These symptoms also can be a sign of other eye problems. If you have any of these symptoms, check with your ophthalmologist.**

## Treatment

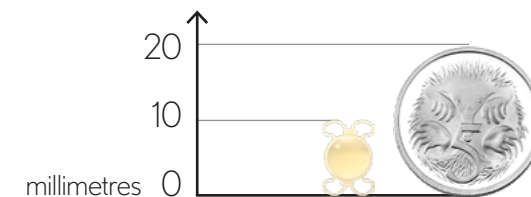
If your vision is mildly affected then you may be able to continue your daily routine adequately with the aid of glasses or contact lenses. This is generally only a temporary solution and cataracts will normally become cloudier over time, resulting in impaired vision.

When the cataract causes your vision to deteriorate to a level which impacts on your quality of life, making everyday activities difficult, then cataract surgery should be considered. The surgery involves an operation to remove the cloudy lens and replace it with a clear artificial replacement lens, known as an intraocular lens (IOL).

## What is an intraocular lens (IOL)?

An IOL is a permanent artificial lens implant which will replace the natural lens removed during cataract surgery.

Most IOLs are made of a flexible, foldable material and usually between 10-12 mm in diameter. Like the lenses of prescription eyeglasses, your IOL will contain the appropriate prescription to give you the best vision possible. There are different types of IOLs to correct specific vision problems.



Actual size comparison between a typical IOL and 5 cent coin.

# Types of Intraocular Lenses (IOLs)

Intraocular Lenses are broadly divided into the following types

## Monofocal Intraocular Lenses

Monofocal IOLs provide clear vision at one focal point, usually both eyes are corrected for distance vision. An alternative to this is monovision where one eye is corrected for distance and the other is corrected for near vision. With both options glasses may still be required for certain tasks, in particular for near and intermediate vision.

## Bifocal Intraocular Lenses

Bifocals, often referred to as multifocals will correct for near and far vision, but may offer limited intermediate vision, which is important for many common tasks such as locking doors, cooking or computer work.

## Trifocal Intraocular Lenses

Trifocal IOLs are designed to correct the full range of vision from far to intermediate and near vision, often reducing the need for spectacles for everyday tasks such as driving, reading the car speedometer or even using your smart phone.<sup>2</sup>

### What if I have Astigmatism?

Today's advancements in technology means that both cataracts and astigmatism can be treated at once during cataract surgery, even with bifocal and trifocal IOLs.



### Monofocal

Designed to correct vision at one distance



### Bifocal

Designed to correct far and near vision.



### Trifocal

Designed to correct the full range of vision: Far, Intermediate and Near vision.





## Which IOL is suitable for me?

There are many technologies available to your surgeon to best treat your cataract. In many cases cataract surgery may reduce the need for spectacles. It is important to understand that since each individual's vision, expectations and lifestyles differ, it is difficult to determine how much you will be dependent on glasses after surgery. Your ophthalmologist will discuss all the options with you and select the IOL best suited to your needs.

## Are there any alternative treatments?

To date, no medication or change in diet can slow down the growth of a cataract or clear the lens.

## Cataract Surgery

Cataract surgery is generally safe and effective and is the most commonly performed surgery in the world. Over 20 million people across the world undergo the procedure every year.<sup>1</sup>

## Before the operation

Prior to the surgery, the cataract procedure will be explained and a pre-admission assessment performed.

Your ophthalmologist will also need to know your medical history to plan the best treatment. Special tests and measurements on the eye will be performed to determine the size and strength of the intraocular lens which will replace the cloudy lens.

Your ophthalmologist will discuss the different IOL choices with you. Once the procedure has been explained, you will be asked to sign a patient consent form.

If you have any questions about the form or surgery, ask your ophthalmologist.

Drops will be placed in your eyes to dilate your pupils, making your vision blurry for several hours, so please ensure you do not drive to the assessment and ideally ask for someone to accompany you home.

## What happens on the day of surgery?

Cataract surgery is usually performed under local or topical anaesthetic and light sedation. Before the operation, eye drops or injections around your eye will be given to numb the eye. You will be fully awake, but you do not need to worry about keeping your eye open. You will not be able to see the operation, although you may be able to see light. The length of time for surgery will depend on many factors including the type and stage of the cataract and the IOL to be implanted.

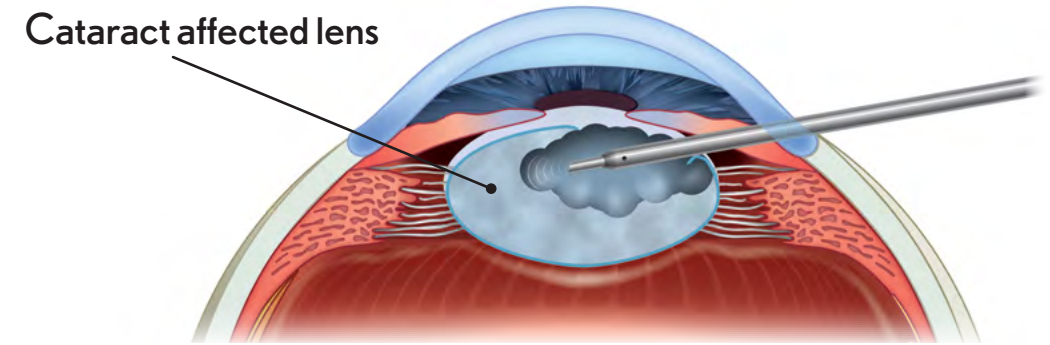
The operation is performed in an operating theatre while you are lying face up on a surgical bed, with sterile surgical sheets placed around the area of the eye. The surgeon will have close-up vision of your eye using a microscope.

**At the start of the procedure** the surgeon makes a small opening on the eye's surface, near the edge of the coloured iris.

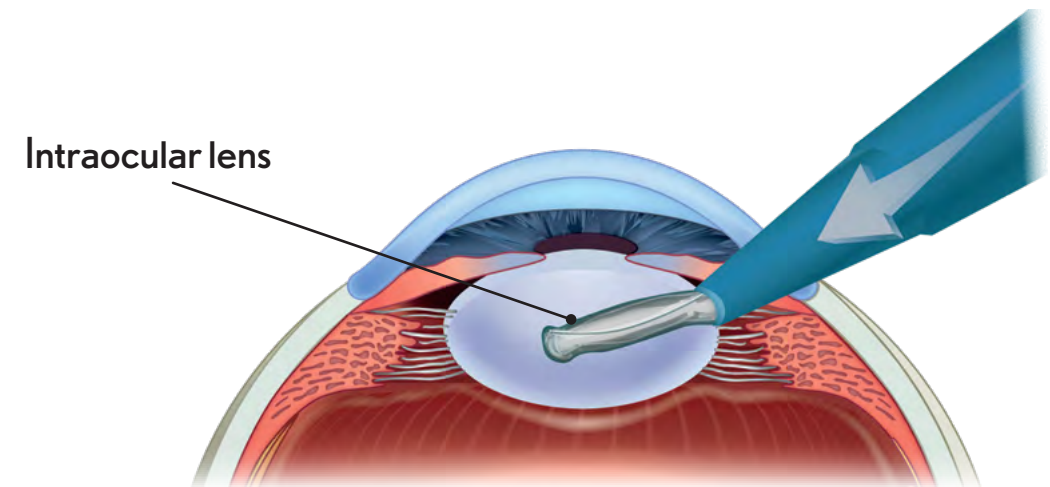
**Then the cataract lens is removed** using a painless, ultrasonic technique called phaco-emulsification, with specialist microsurgical instruments. Ultrasonic waves are used to break down the cataract into small pieces which are then removed with suction through a small tube, vacating the capsular bag for the artificial lens.

**The artificial intraocular lens is then implanted** by injecting it into the capsular bag.

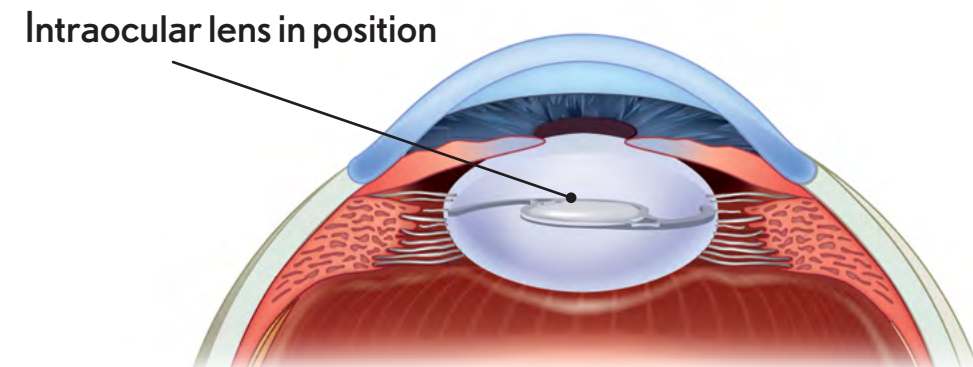
Phaco-emulsification is the most common surgical technique, but your ophthalmologist may also recommend Femtosecond Laser-Assisted Cataract Surgery (FLACS). In laser-assisted cataract surgery, an advanced femtosecond laser replaces or assists use of a hand-held surgical tool in the early stages of surgery.



First the cloudy lens is removed through a small opening.



Then a rolled IOL is inserted into the eye through the same opening.



The IOL unrolls inside the eye and is then optimally positioned inside the capsular bag.

## After the operation

Cataract operations are usually performed in a day surgery facility, so you should be able to return home on the same day as the procedure, without any overnight stay. You may have a protective pad placed on your eye which you will need to wear up until your follow up appointment. You will also be shown how to correctly put in the eye drops.

## Follow-up appointments

Your ophthalmologist will arrange follow-up appointments with you to assess the improvement to your vision. You may be able to obtain your glasses prescription between 8-12 weeks after surgery. Your ophthalmologist will inform you when you can drive again, as well as provide guidance on returning to daily pursuits and what precautions you need to take in the days and weeks following surgery.

## Complications

Cataract surgery is now a commonly performed, routine procedure.<sup>2</sup> Your ophthalmologist would have recommended undergoing cataract surgery as the potential advantages and improvements to vision will be far greater than the possible complications. Like any surgical procedure, complications although rare, vary from patient to patient and are best explained in detail with your ophthalmologist.

**Should you experience any sudden change to your vision, increased pain or redness following cataract surgery, you should contact your ophthalmologist immediately.**



## Will I feel any pain?

No pain is felt as the cataract slowly develops. Prior to cataract surgery, a local anaesthetic is given, so you will not feel any pain during surgery. As the anaesthetic wears off after the operation, you may feel a slight ache in and around the eye. The medical staff can offer advice on pain relief.

## How quickly will my vision return?

Your vision should start to return a few hours after the operation. For some people it may take longer as the effect of the drops wear off. You will notice further improvement to your vision during the following weeks.

## Will I still need to wear glasses?

The need for glasses or changes to your glasses prescription will be affected by which intraocular lens has been implanted in your eye. Different types of intraocular lenses are available with different ways of correcting for near, intermediate and distance vision. Your surgeon will explain the different options to you prior to the surgery.

# Bausch + Lomb Intraocular Lens Guide

There are a range of intraocular lenses to suit your individual visual needs.

## Trifocal IOLs

These lenses have three different focal points offering a full range of vision from distance to near and everything in between. Many people implanted with these IOLs don't need to wear glasses for everyday tasks such as driving or using their smartphone or tablet.<sup>2</sup>

### FINEVISION and FINEVISION TORIC Trifocal IOLs



FineVision intraocular lenses are suitable for people who want to reduce their dependency on glasses. FineVision Toric IOLs also correct for astigmatism. These IOLs feature UV and blue light blockers.

## Monofocal IOLs

These lenses are used to correct distance vision or used in monovision correction.

### enVista and enVista TORIC Monofocal IOLs



The enVista<sup>®</sup> IOLs are made of an advanced next-generation material designed to provide long term clarity.<sup>3</sup> enVista Toric also corrects for astigmatism.

### MICROPURE Monofocal IOL



MicroPure features an advanced material that provides clarity and optimised vision.<sup>4</sup> This IOL also features an UV and blue light blocker.

## Visual Correction Provided by Each Intraocular Lens

LENS TYPE	DISTANCE	INTERMEDIATE	NEAR	ASTIGMATISM
FINEVISION				
FINEVISION TORIC				
enVista				
enVista TORIC				
MICROPURE				

Your ophthalmologist will advise whether this product is suitable for your condition. Any surgical procedure carries risks. Before proceeding you should seek further advice from a qualified eye care practitioner.



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**References:** **1** Market Scope June 2010: Report of Global IOL Market. **2** Daya S, Espinosa M; The FineVision Trifocal Lens, ESCRS 2011 **3** Tetz MR, Werner L, Schwahn-Bendig S, Battle JF. A prospective clinical study to quantify glistenings in a new hydrophobic acrylic IOL. Paper presented at: American Society of Cataract and Refractive Surgery (ASCRS) Symposium & Congress; April 3-8, 2009; San Francisco, CA **4** Data on file. C. Chassain, MD; Clinical outcomes after 3 years.

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