

## Cataracts, age-related

### Introduction

Cataracts are cloudy patches in the lens that can make vision blurred or misty. They are a very common eye condition.

Cataracts can develop in one or both eyes, and one eye can often be more affected than the other.

The lens is the transparent structure positioned at the front of the eye. It is normally clear and allows light to pass through to the back of the eye. However, if parts of the lens become cloudy (opaque), light is unable to pass through the cloudy patches.

Over time, the cloudy patches become bigger, and more of them develop. As less light is able to pass through the lens, the person's vision is likely to become blurry or cloudy. The cloudier the lens becomes, the more the person's sight will be affected.

### When to see your doctor

If you have problems with your vision, make an appointment to see your doctor (also known as an optometrist). An doctor can examine your eyes and test your sight.

It's advisable for you to have your eyes tested every two years as cataracts are sometimes diagnosed during a regular eye test.

### Who is affected

Cataracts are the main cause of impaired vision worldwide, particularly in developing countries. They affect men and women equally.

Cataracts are more common in older people. Cataracts that affect older people are known as age-related cataracts. More than half of people who are over 65 have some cataract development in one or both eyes.

In rare cases, babies have cataracts when they are born, or children develop them at a young age.

### Who's at risk

As well as your age, there are several things that may increase your risk of developing a cataract, including:

a history of cataracts in your family  
smoking

lifestyle factors, such as poor diet

overexposing your eyes to sunlight

taking steroid medicines (medicines that contain powerful chemicals called hormones) for a long time

certain health conditions, such as diabetes

### Treating age-related cataracts

If cataracts are mild, stronger glasses and brighter reading lights may enable people to live with the condition. If left untreated, cataracts can cause blindness. However, this is very rare in developed countries.

Once cataracts start interfering with daily activities such as cooking or getting dressed, surgery is usually recommended. It's estimated that around 10 million cataract operations are performed around the world each year.

### Are there any risks?

Cataract operations are generally very successful, with a low risk of serious complications. The most common risk is developing a condition called posterior capsule opacification (PCO), which causes cloudy vision to return.

If this happens, you may need to have laser eye surgery to correct it. Speak to your ophthalmologist before cataract surgery to discuss any risks.

### Symptoms of age-related cataracts

Cataract symptoms can develop over many years, and usually affect older people.

Over time, the lens (the transparent structure at the front of the eye) gradually becomes cloudy. If your cataracts are mild, you may not notice any symptoms to start with.

If you have cataracts in both eyes, one eye may be more affected than the other. Your vision may:

be blurred

be cloudy or misty

have small spots or dots on it (patches where your sight is not as clear)

Your sight may be affected by the light. For example, you may find it more difficult to see:

if the light is dim

when the light is bright, such as on a very sunny day, or in bright artificial light

Other ways that cataracts may affect your sight can include:

The glare from bright lights may be dazzling or uncomfortable to look at. Colours may look faded or less clear.

Everything may have a yellowish tinge.

Reading, watching television and other daily activities may be more difficult than they used to be.

You may have double vision (seeing two images of an object instead of one).

You may see a halo (a circle of light) around bright lights, such as car headlights or street lights.

If you wear glasses, you may find that they have become less effective.

Cataract symptoms can be similar to the symptoms of other eye conditions. It's important to visit your DOCTOR for a check-up if you notice any changes to your vision.

### Causes of age-related cataracts

Although the exact cause of age-related cataracts is unknown, research suggests that there are certain things that can increase the risk of cataracts.

Changes to the lens in the eye

As people grow older, changes can occur to the protein that makes up the lens (the transparent structure at the front of the eye).

Some experts think that this may be linked to how fluids and nutrients reach the eye. These changes in the lens protein can cause cloudy areas to develop. It isn't known how or why getting older causes these changes to happen.

### Who's at risk

Research suggests certain things may increase your risk of developing age-related cataracts. These include:

- a history of cataracts in your family

- smoking

- lifestyle factors, such as poor diet

- overexposing your eyes to sunlight

- taking steroid medicines (medicines that contain powerful chemicals called hormones) for a long time

Other causes

In younger people, cataracts may have other less common causes. For example:

- diabetes (a long-term condition caused by too much glucose in the blood, which can cause people to develop cataracts at an earlier age)

- injuries to the eye

- other eye conditions, such as uveitis (inflammation of the uveal tract in the eye)

### Diagnosing age-related cataracts

If you have problems with your vision, make an appointment to see your doctor (also known as an optometrist). An doctor can examine your eyes and test your sight. They are trained to recognise sight defects and eye conditions.

#### Eye examination

The doctor may look at your eyes with an instrument called an ophthalmoscope. An ophthalmoscope has a light on the end that

produces a magnified image of your eye. By shining a bright light into your eye, the ophthalmoscope enables the doctor to look inside your eye. If you have cataracts, your optometrist will be able to see them in your eye. They will also be able to see how much of your lens is affected.

## Referral

In some cases, you may be referred to an ophthalmologist or an ophthalmic surgeon who will be able to confirm the diagnosis and plan your treatment. Ophthalmologists and ophthalmic surgeons are doctors who specialise in eye conditions and their treatment.

## Treating age-related cataracts

Treatment for age-related cataracts may not be needed if you have no symptoms or your sight is only mildly affected. Surgery is the only way to treat cataracts that become more severe.

In the early stages of a cataract, your vision may be improved with stronger glasses, or by using a brighter light when you read, for example. However, the improvement may not last long.

## When cataracts are treated

Your DOCTOR will probably recommend treatment if your loss of vision affects your usual daily activities. For example, treatment may be recommended if your cataract(s) affect:

your ability to look after yourself or someone else

your driving

going out

seeing people's faces

your work

reading

watching television

Surgery

Cataracts are treated by having cataract surgery to remove the cloudy lens in your eye. In most cases, the natural lens is replaced with an

artificial, clear plastic lens. This is called an intraocular implant or intraocular lens (IOL).

Most cataract operations are carried out under local anaesthetic, as keyhole surgery (where a very small incision is made). You will probably be admitted as a day patient (day case), which means that you won't need to stay in hospital overnight.

The most common cataract operation is called phacoemulsification, which is sometimes referred to as phaco extracapsular extraction. Cataracts can't be treated with laser surgery (when beams of energy are used).

Before the operation

Before having cataract surgery, your DOCTOR or doctor will refer you to an ophthalmologist or an ophthalmic surgeon (medical doctors who specialise in eye conditions and their treatment). They will assess your eyes and your general health. This is called a pre-operative assessment.

During the assessment, your eyes will be measured. The artificial lens that will replace your natural lens can then be prepared. An appointment will probably be made for your operation to take place during a separate visit.

Just before the operation, drops to dilate (widen) your pupil (the black circle in the middle of your eye) will be put into your eye. You will also be given a local anaesthetic that will prevent you feeling any pain during the procedure. This may be applied to your eye as drops, although sometimes an injection in the tissue around the eye may be used.

Once the anaesthetic takes effect, you will not be able to feel anything. While the operation is taking place, all you will be able to see is a bright light. You will not be able to see what is happening.

The replacement lens

Different types of replacement lens are available. These include the following:

fixed-strength lenses (monofocal), which are set for one level of vision, usually distance vision

multifocal lenses, which allow two or more different strengths, such as near and distance vision

accommodating lenses, which allow the eye to focus on both near and distant objects, in a similar way to the natural human lens

Your ophthalmologist will discuss with you which lens will suit you.

Ask your DOCTOR or ophthalmologist about the types of lenses that are available in your area. If NHS funding is not available for these types of lenses, you may be able to pay to have them fitted on a private basis.

The operation

During the operation, your ophthalmologist will make a very small incision (cut) in the surface (cornea) at the front of your eye. Your ophthalmologist will then insert a tiny probe through this cut. The probe breaks up the cloudy lens into tiny pieces using ultrasound (high-frequency sound waves). The tiny pieces will then be sucked out of your eye.

Once this is done, your ophthalmologist will insert an artificial, clear plastic lens through the incision. The lens sits in a little "pocket" called the lens capsule to keep it in place. The lens is folded when it is inserted, and once it is in position it is allowed to unfold.

The operation usually takes 15 to 30 minutes, although sometimes it can take slightly longer.

Other operations

Two other operations may be performed to remove age-related cataracts, although these are much less common. They are:

manual extracapsular extraction

intracapsular extraction

In manual extracapsular extraction, the ophthalmologist makes a slightly larger cut in the eye. The lens is removed in one piece, rather than being broken up by ultrasound.

During intracapsular extraction, the lens capsule is removed, as well as the lens. A replacement plastic lens is then sewn into the eye. In some cases, special (aphakic) glasses or contact lenses may need to be worn instead. Intracapsular extraction is rare.

## After your operation

The vision of most people who have cataract surgery improves almost immediately. However, it may take a little time to settle down completely. The incision (cut) in the eye's surface is so small that it usually heals by itself, although sometimes a small stitch may be needed. Your ophthalmologist will probably advise you to take it easy, for example, by:

avoiding sports and any vigorous activities

not rubbing your eye

not getting soapy water in your eye, for example, while taking a shower  
wearing a pad over your eye to protect it

not wearing eye make-up until your recovery is complete

You may also be given eye drops to use, which will help to prevent infection and inflammation while you recover. It is important to use these for as long as your ophthalmologist advises you to.

After the operation, your plastic lens will be set up for a certain level of vision. You may need to wear glasses in order to see objects that are:

far away (distance vision)

close to you (near vision)

If you wore glasses previously, your prescription will probably change. It will take several weeks after the operation for your vision to settle down before your optometrist can give you a new prescription.

## Complications of age-related cataracts

Although cataract surgery is usually very successful, some people may experience complications which need further treatment. You may also need to wear glasses afterwards.

### Cloudy vision

The most common risk associated with cataract surgery is developing a condition called posterior capsule opacification (PCO). This is where part of the lens capsule (the "pocket" that the lens sits inside) thickens and causes cloudy vision. This is not the cataract returning, but is due to cells growing over the back of the artificial lens.

PCO used to be very common, but there's much less risk of it now due to changes in modern intraocular lens design. PCO usually develops between six months and five years after the operation has been carried out.

If this happens, you may need to have another operation to correct it. This will be done with laser eye surgery (where energy beams are used to cut through part of the eye). During laser eye surgery, the cloudy part of the lens capsule will be removed, with enough left to continue holding the artificial lens in place.

This procedure should only take around 15 minutes, and your vision should be improved immediately or within a few days. As no surgical incisions (cuts) or stitches are necessary, you can usually return to your normal activities straight away. It is common to see floaters in your eyes after this procedure.

Other complications

Other possible complications of cataract surgery are much rarer but can include:

infection in the eye

bleeding in the eye

inflammation (swelling and redness) in the eye

tearing of the lens capsule

a bit of the cataract dropping into the back of the eye

damage to other parts of the eye, such as the cornea (the transparent outer layer of the eye)

In most cases, the risk of complications occurring during cataract surgery is less than 1%. The most common complication is tearing of the lens capsule, which may occur more frequently than this.

It is usually possible to treat any complications that arise from cataract surgery successfully. Occasionally, your vision may be worse than it was before surgery or there may be permanent damage to your eye, causing a loss of sight. However, this is very rare.

Cystoid macular oedema

One possible complication that can cause loss of vision is cystoid macular oedema. This is where fluid builds up between layers of the retina (the layer of nerve cells that lines the inside of the back of the eye).

There are two different types of cystoid macular oedema:

angiographic cystoid macular oedema

clinical cystoid macular oedema

Angiographic cystoid macular oedema is a very common condition, but it doesn't affect vision. Clinical cystoid macular oedema can cause vision loss and is thought to make up between 0.1% and 12% of cases.

Cystoid macular oedema may sometimes be treated with non-steroidal anti-inflammatory drugs (NSAIDs). However, research is still being carried out in this area.

Wearing glasses

The natural lens in your eye can change shape. This is how it enables your eyes to focus on objects that are both near to you and further away. Fixed-strength (monofocal) and multifocal replacement plastic lenses cannot do this. Therefore, after cataract surgery you may also need reading glasses or glasses for distance vision.

A review of some studies found that 95% of people with a monofocal lens and 68% of people with a multifocal lens needed to wear glasses after having cataract surgery.

Another type of artificial lens, called an accommodating lens, aims to allow the eye to focus on both near and distant objects.

The National Institute of Health and Clinical Excellence (NICE) has reported that there is some evidence that this type of lens improves clearness of vision. However, more evidence is needed to confirm that this lens improves "accommodation" (how the lens adapts to focus images). NICE also noted that this area of technology is changing rapidly, and it is not yet fully understood how these lenses work.

Preventing age-related cataracts

It isn't possible to prevent cataracts. However, you can reduce the risk of them developing.

As well as your age, the following factors may increase your risk of developing a cataract:

a history of cataracts in your family

smoking

lifestyle factors, such as a poor diet

overexposing your eyes to sunlight

taking steroid medicines (medicines that contain powerful chemicals called hormones) for a long time

certain health conditions, such as diabetes

You can help to reduce your risk of cataracts by wearing sunglasses and a hat with a peak or wide brim to protect your eyes from the sun. Use a pair of sunglasses with a CE mark, UV400 label or that offer 100% UV protection.

Quitting smoking

If you're committed to giving up smoking but you don't want to be referred to a stop-smoking service, your DOCTOR should be able to prescribe medical treatment to help with any withdrawal symptoms that you may experience after giving up.

For more information about giving up smoking, see [treatment for quitting smoking and stop smoking](#).

Diet

A healthy, balanced diet is important for your general health, including the health of your eyes. Eating a healthy diet can't prevent cataracts, but some experts think that:

a poor diet may increase your risk of developing age-related cataracts

a healthy diet may slow down the growth of age-related cataracts

As part of your healthy diet, eat at least five portions of fruit and vegetables every day.

Eye tests

It's important to have your eyes tested regularly by an optometrist (a specialist who examines eyes and tests sight), even if you don't wear glasses.

In general, it's advisable to have your eyes tested every two years. This enables cataracts to be picked up early, as well as any other eye conditions, such as age-related macular degeneration (a painless eye condition where you gradually lose the ability to see what is directly in front of you).

## Diabetes and cataracts

People with diabetes (a long-term condition caused by too much glucose in the blood) tend to develop cataracts at an earlier age than others. This is because the high levels of glucose in their blood can damage blood vessels, nerves and organs, causing a number of complications.

If you have diabetes, follow your DOCTOR's healthcare advice carefully. This will help to reduce your risk of developing cataracts, as well as other eye problems, such as diabetic retinopathy (a condition that damages the tiny blood vessels that nourish the retina at the back of the eye).

## Cataract surgery

### Introduction

Cataract surgery is a common procedure used to treat cataracts that are affecting your daily activities.

What are cataracts?

Cataracts are cloudy patches in the lens (the transparent structure at the front of the eye) which can make vision blurred or misty and can develop in one or both eyes.

Over time, the cloudy patches can become bigger and more of them can develop. As less light is able to pass through the lens, a person's vision is likely to become blurry or cloudy. The cloudier the lens becomes, the more a person's sight is affected.

In most cases, a cataract will continue to develop and surgery to remove the category is the only way to restore vision.

Read information about when cataract surgery is used.

The operation

Cataract surgery is one of the most common and quickest forms of surgery. Many people are able to return to their usual daily routine 24 hours after the operation.

The procedure lasts 30-45 minutes and vision is improved almost immediately.

If you have cataracts in both eyes, surgery will be carried out on separate occasions. This gives the first eye time to heal and your vision time to return.

Read more information about how cataract surgery is performed.

The results of cataract surgery may depend on which type of lens is fitted. Most people will need to wear glasses for either near or distance vision, or both. However, once lenses have been fitted, about 95% of people will find their vision returns to how it was before the cataracts appeared.

Getting back to normal

You will be able to go home as soon as the effects of the anaesthetic have worn off. You'll have to arrange for someone to take care of you for the first 24 hours after surgery.

Take it easy for the first two or three days after the operation and make sure to use any eye drops you are given by the hospital.

Other recommendations include:

try not to touch or rub your eye

keep soap and shampoo out of your eyes

do not swim for two weeks after surgery

avoid playing sports where there is a risk that you may get knocked in the eye for around two weeks

Read more information about recovering from cataract surgery.

Are there any risks?

Cataract surgery is common and associated risks are low. However, there are more risks involved with cataract surgery in children and people with certain conditions such as:

advanced glaucoma

diabetic retinopathy

severe short-sightedness (myopia)

someone who has ever taken alpha receptor antagonist tablets

The most common complication is a condition called posterior capsule opacification (PCO) which causes cloudy vision to return. If you develop PCO, you may need laser eye surgery to correct it.

Other complications are much rarer and include:

infection in the eye

inflammation (swelling and redness) in the eye

tearing of the lens capsule

retinal detachment

inability to remove all of the cataract

Most people find cataract surgery is successful and are happy with the results. However, any of these complications may lead to loss of vision or pain and may require further surgery.

When you need cataract surgery

If you have a cataract getting in the way of your daily activities and affecting your ability to drive or read, you may need cataract surgery.

Typical early signs of cataracts are:

blurred vision or dazzle from lights (such as oncoming car headlights)

increasing short sightedness (myopia)

colours becoming duller

In the past, people with cataracts were encouraged to wait until they could hardly see. These days, surgery to remove a cataract can be done at any stage of development, once it is affecting your ability to function.

Your DOCTOR may recommend cataract surgery if you are at risk of developing another eye condition, such as:

macular degeneration – a painless eye condition that leads to gradual loss of central vision (the ability to see directly in front of you)

diabetic retinopathy – a complication of diabetes where part of the eye becomes progressively damaged

angle closure glaucoma

Alternatives to surgery

The first signs of a cataract may be helped with:

new glasses

brighter lighting  
anti-glare sunglasses  
magnifying lenses

However, these will not stop the cataract growing and blurring your vision. There is no medication that can clear a cloudy lens.

Not having surgery

If your cataract is not interfering with your daily life, you may decide not to have the operation straight away. It is safe to leave a minor cataract. It does not become more difficult to remove a cataract should you decide to wait before having surgery.

However, without surgery, your lens will gradually become so cloudy you will not be able to see detail at all, although some light will always be distinguishable.

How it is performed

Cataracts are removed using surgery. If you have cataracts in both eyes, you will have surgery on them on separate occasions. This gives the first eye time to heal and your vision time to return.

Most cataract operations are performed as day surgery under local anaesthetic, which means you can go home afterwards. Nearly all of your vision will return within two days of surgery but you will need someone to look after you for the first 24 hours after surgery. Read more about recovering from cataract surgery.

Pre-operative assessment

Before your operation, you will be referred to a specialist eye doctor (an ophthalmologist or ophthalmic surgeon). They will assess your eyes and general health.

During the assessment, your eyes are measured to prepare for the artificial lens that will replace your natural lens.

Surgery

Cataract surgery is very common and can often be completed within 45 minutes.

Phacoemulsification is the most common cataract procedure and usually takes 15-30 minutes.

During phacoemulsification, your surgeon will put drops in your eye to dilate (widen) your pupil (the black circle at the centre of your eye). You will also be given a local anaesthetic (painkilling medication), which can be applied as eye drops or given as an injection into the tissue around the eye.

The surgeon makes a tiny incision (cut) in your cornea (the transparent outer layer on the front of your eye). A small probe that releases ultrasound waves (high-frequency sound waves) is inserted into your cornea to break the cataract up into tiny pieces. After the ultrasound probe has been removed, a new probe is inserted which sucks out the pieces of the cataract.

When the entire cataract has been removed, the surgeon inserts a small plastic lens through the incision in your cornea. The lens sits in the lens capsule, behind the pupil. The replacement lens is folded in half when it's inserted so it can fit through the incision in the cornea. When it is in place, it unfolds itself and adopts the natural position of the old lens.

#### Replacement lenses

When the cloudy lens is removed it is replaced with an artificial, clear plastic lens. This is called an intraocular implant, or intraocular lens (IOL).

Three types of IOL are available. Your ophthalmologist will help you to decide which type of lens will be best for you. The three types of lens are: fixed strength lenses (monofocal), which are set for one level of vision, usually distance vision

multifocal lenses, which allow two or more different strengths, such as near and distance vision

accommodating lenses, which allow the eye to focus on both near and distant objects, in a similar way to the natural human lens

#### Risks of cataract surgery

Cataract surgery is very common and the associated risks are very low, but can be serious.

The Royal National Institute of Blind and Partially Sighted People (RNIB) estimates that less than 2% of people experience any serious complications that require further surgery.

However, ask your eye surgeon (ophthalmologist) to explain the possible risks before your operation. If a severe cataract is not treated, it is possible loss of sight may be permanent.

### Cloudy vision

The most common risk associated with cataract surgery is developing a condition called posterior capsule opacification (PCO). This is where part of the lens capsule (the 'pocket' that the lens sits inside) thickens and causes cloudy vision. This is not the cataract returning, but cells growing over the back of the artificial lens.

PCO is common, affecting the vision of up to half of everyone who has cataract surgery. PCO usually develops between six months and five years after the operation.

If you develop PCO, you may need another operation to correct it using laser eye surgery (when energy beams are used to cut through part of the eye). During laser eye surgery, the cloudy part of the lens capsule will be removed, with enough of the lens being left to hold the artificial lens in place.

The procedure should only take around 15 minutes, and your vision should either be improved immediately or within a few days. As no surgical incisions or stitches are necessary, you should be able to return to your normal activities straight away.

### Other complications

Other possible complications of cataract surgery are much rarer but can include:

infection in the eye

bleeding in the eye

inflammation (swelling and redness) in the eye

tearing of the lens capsule

a bit of the cataract dropping into the back of the eye

damage to other parts of the eye, such as the cornea (the transparent outer layer of the eye)

retinal detachment

inability to remove all of the cataract

You should seek immediate medical attention if you experience sudden loss of sight or increasing pain after cataract surgery.

However, the College of Optometrists has estimated that, in most cases, the risk of complications occurring during cataract surgery is less than 1 in 100. Although tearing of the lens capsule may occur more frequently than this.

It is usually possible to successfully treat complications that arise from cataract surgery. Occasionally, your vision may be worse than it was before surgery or there may be permanent damage to your eye, causing a loss of sight. However, this is rare.

Cystoid macular oedema

One possible complication that can cause loss of vision is cystoid macular oedema. This is where fluid builds up between layers of the retina (the layer of nerve cells that lines the inside of the back of the eye).

There are two different types of cystoid macular oedema:

angiographic cystoid macular oedema

clinical cystoid macular oedema

Angiographic cystoid macular oedema is very common, but does not affect vision. Clinical cystoid macular oedema can cause vision loss and is thought to make up between 0.1% and 12% of cases.

Cystoid macular oedema may be treated with non-steroidal anti-inflammatory drugs (NSAIDs), although research into other treatments is continuing.

Childhood cataract surgery

More risks are involved with childhood cataract surgery. They include:

glaucoma (increased pressure inside the eye that affects vision)

squint (strabismus), where one eye turns inwards, outwards, upwards or downwards while the other eye looks forwards

abnormalities that affect the pupil (the black circle at the centre of each eye)

vision becoming cloudy again (visual axis opacification or posterior capsule opacification (PCO))

retinal detachment, when the retina (the layer of nerve cells inside the back of the eye) becomes separated from the inner wall of the eye  
infection, such as endophthalmitis (a rare bacterial infection)

If childhood cataracts are not treated, the child may become blind. Even if the cataracts are removed, visual impairment or blindness can remain.

### Wearing glasses

The natural lens in your eye can change shape. This is how it enables your eye to focus on objects both near to you and further away.

Fixed strength (monofocal) and multifocal replacement plastic lenses cannot do this. Therefore, after cataract surgery, you may also need reading glasses or glasses for distance vision.

One review of a number of studies found that 95% of people with a monofocal lens and 68% of people with a multifocal lens needed glasses after having cataract surgery.

Another type of artificial lens, called an accommodating lens, aims to allow the eye to focus on both near and distant objects.

The National Institute of Health and Clinical Excellence (NICE) has reported some evidence that this type of lens improves clearness of vision. However, more evidence is needed to confirm this lens improves accommodation (how the lens adapts to focus images). NICE also noted this area of technology is changing rapidly, and it is not yet fully understood how these lenses work.

### Recovering from cataract surgery

#### Driving

If you have cataracts, it could affect your ability to drive. It is your legal obligation to inform the correct governmental agency. If you have been treated for cataracts and can read a number plate 20.5m (67ft) away with both eyes open you can start driving again.

Following cataract surgery, you can go home once you have recovered from the effects of the local anaesthetic (painkilling medication).

Arrange for someone to collect and take you home as you will not be allowed to drive. You may find wearing sunglasses or a hat when you leave hospital helpful because your eye could be sensitive to sunlight.

Also arrange for someone to take care of you for the first 24 hours after surgery. This is because full vision may take up to two days to return, though sensation usually returns to the eye within a few hours. Complete healing may take several months.

Follow up

Your ophthalmologist or a nurse will give you eye drops to help the eye heal and prevent infection.

You will be given a 24-hour phone number to call if you have any problems and a date for a follow-up appointment. Most ophthalmologists see the people they have treated one to three weeks after the operation.

Side effects

Side effects of cataract surgery are usually temporary. They can include:  
an itchy or sticky eye and blurry vision for a few days after the operation  
your eye may feel gritty for a few days

your eye may look red for a few days

a slight ache, which should pass after a few days

bruising of the eyelid or eye, which will usually heal within a week

It is also common to experience more floaters than normal after cataract surgery. They should settle down a week or two after surgery.

However, floaters can be a symptom of posterior vitreous detachment (PVD), a common condition that often occurs naturally with age. PVD does not usually cause any long-term problems with your vision but there is a small risk it can lead to retinal detachment.

See your ophthalmologist if you begin to experience the following symptoms at a later date:

a sudden increase in the number or size of floaters

flashes of light

blurred vision

a dark 'curtain' moving across your vision

Recovering at home

Take it easy for the first two or three days after the operation. Continue to use the eye drops that you have been given as instructed, usually for about a month. New glasses can also usually be prescribed after about a month.

If you experience more than mild pain or loss of vision, or if your eye starts to go red, contact your hospital for advice. Painkillers, such as paracetamol, should ease mild pain.

#### Activities

In the past, the advice was not to bend after surgery, but this is no longer the case. You can bend, carry shopping, wash your face and hair, and generally carry on with life as normal.

You should:

- try not to touch or rub your eye

- keep soap and shampoo out of your eyes

- do not wear eye make up for one week after surgery

- do not swim for two weeks after surgery

- avoid playing sports where there is a risk that you may get knocked in the eye, such as tennis, for around two weeks

You should be able to read and watch television almost immediately if you have reading glasses, but your vision may be blurry as your healing eye gets used to its new lens. You may have to get new reading glasses.

You can drive again when you can read a number plate 20.5m (67ft) away. You may have to get new glasses to be able to do this.

#### Results of cataract surgery

The sight of most people (around 95%) will improve almost immediately after cataract surgery. However, cataract surgery will not always completely restore your vision.

After the operation, if you do not have other eye conditions, you should be able to:

- see things in focus, although you may still need glasses

- look into bright light without as much glare

- tell the difference between colours

start to enjoy your usual activities, such as reading, working, watching television, sport and driving

Approximately 1 in 100 people will need to have a second operation. One person in 1,000 will experience a complication that results in them having permanently worse vision, even when wearing glasses.

Success of replacement lens

Treatment for cataracts usually involves surgery to replace the clouded natural lens with an artificial monofocal lens, which has just one strength of focus. A monofocal lens will usually restore good distance vision, but you may still need reading glasses for close work.

Sometimes, the natural lens is replaced with either a multifocal lens or an accommodating lens, which allows you to focus on both near and distant objects.

Some patients who have a multifocal lens fitted may not need to wear glasses at all after surgery. A review of studies by the National Institute for Health and Clinical Excellence (NICE) showed that 68% of patients who had multifocal lenses implanted needed glasses after their operation, compared with 95% of patients given monofocal lenses.

For any lens replacement, the quality of your vision after cataract surgery depends on the correct measurements of your eye being taken before your operation.

The pre-operative assessment ensures the most appropriate replacement lens is chosen to fit your eye, and reduces your chances of having poor vision after your operation.

Glasses prescription

It will take several weeks after cataract surgery for your vision to settle down before your optometrist (a person who examines eyes, tests sight and prescribes glasses and contact lenses) can give you a new glasses prescription, if you need one.

### **Cataracts, childhood**

Cataracts are cloudy patches in the lens of the eye that can make vision blurred or misty. They are called childhood cataracts (also known as congenital or infantile cataracts) when a child is born with them.

Cataracts in babies and children are rare.

They can develop in one or both eyes, and one eye can often be more affected than the other.

The lens (the transparent structure at the front of the eye) is normally clear. It allows light to pass through to the back of the eye. If parts of the lens become cloudy (opaque), light cannot pass through the cloudy patches.

Over time, these cloudy patches usually become bigger, and more of them develop. As less light is able to pass through the lens, vision may become blurry or cloudy. The cloudier the lens becomes, the more sight will be affected.

Childhood cataracts are often referred to as:

congenital cataracts – cataracts that are present when a baby is born or shortly afterwards

developmental, infantile or juvenile cataracts – cataracts that are diagnosed in older babies or children

What causes cataracts in children?

In most cases of childhood cataracts, there is no family history and the exact cause is not known.

However, some possible causes include genetic conditions or infections during pregnancy. Read more about causes of childhood cataracts.

Although childhood cataracts that run in the family cannot be prevented, you may want to read about preventing childhood cataracts for advice on avoiding infections during pregnancy and genetic testing and counselling.

How are cataracts in children diagnosed?

Parents are offered full physical examinations for their newborn, which includes a test for congenital cataracts.

Older children may show signs of cataracts if their vision is affected. For example, your child may:

have difficulty focusing on certain objects

hold their head at a certain angle

develop a squint

See your DOCTOR if you are concerned about your child's vision.

## Treating cataracts in children

Cataracts can be mild in babies and children, and often have little or no effect on their vision. However, they can also slow down or stop the normal development of sight during childhood.

Cataract surgery can be performed to remove the cloudy lens and replace it with an artificial lens. Children will often need to wear glasses after the operation, or a patch to strengthen the vision in the weaker eye. Most children with childhood cataracts live a full and normal life.

Are there any risks?

Cataracts that are not treated can sometimes cause irreversible damage to eyesight, including blindness.

Cataract operations are generally very successful, with a low risk of serious complications. The most common risk associated with cataract surgery is developing a condition called posterior capsule opacification (PCO), which causes cloudy vision to return.

If this happens, your child may need surgery to correct it. Speak to your ophthalmologist before cataract surgery to discuss any risks.

## Causes of childhood cataracts

In many cases, it is not possible to determine the cause of childhood cataracts.

However, some possibilities are:

genetic conditions

infections during pregnancy

These are explained in more detail below.

### Genetic conditions

Cataracts present from birth can be caused by genetic conditions. These are conditions that affect your genes (the units of genetic material that determine many of your body's characteristics) and can be inherited (runs in the family).

Cataracts can also be associated with conditions caused by chromosome abnormalities, such as Down's syndrome. Chromosomes are the parts of the body's cells that carry the genes.

### Infections

Cataracts present from birth can also be caused by infections caught by the mother during pregnancy. The most common infections include:

rubella (German measles): an infectious disease caused by a virus

toxoplasmosis: a condition contracted from eating uncooked meat, or from coming into contact with contaminated soil or cat's faeces

cytomegalovirus: a common virus that is part of the herpes family of viruses

chickenpox: a mild but highly infectious condition caused by a virus

### Other causes

Cataracts present from birth can also be linked to other eye conditions, including:

retinopathy of prematurity: a condition found mainly in babies born before week 37 of pregnancy

aniridia: a rare condition where the iris (the coloured part of the eye) is not formed properly

Conditions that affect the body's metabolism (the process that turns food into energy) can sometimes cause cataracts to develop in older babies or children, although these are rare. For example:

galactosaemia: when the sugar galactose (which mainly comes from lactose, the sugar in milk) cannot be broken down by the body

diabetes: a chronic (long-term) condition caused by too much glucose in the blood

Eye injuries can also cause cataracts sometimes.

### Diagnosing childhood cataracts

It is important congenital cataracts (cataracts you are born with) are diagnosed as early as possible, ideally during the first few weeks after a baby is born. This will reduce the chances of sight loss.

### Screening of newborn babies

Parents are offered full physical examinations for their newborn babies the first within 72 hours of the baby's birth

the second when the baby is about six-to-eight weeks old

Congenital cataracts are among the conditions screened for in these examinations.

During screening your baby's eyes are checked by looking at their general appearance and how they move. If your baby's eye looks cloudy, it could be a sign they have cataracts.

Sometimes, it can be difficult to check the eyes of newborn or very young babies because:

Their eyelids are swollen.

Their eyes are closed.

They are unsettled, anxious or irritated.

Even though cataracts may be present from birth, sometimes they are not diagnosed until the child is older. All children under the age of 16 are entitled to free sight tests, which they should have every two years or so.

Checking children's eyes

If it is thought your baby or child may have cataracts, they will be referred to either:

an ophthalmologist: a medical doctor who specialises in eye conditions and their treatment or surgery

a paediatric ophthalmologist: a medical doctor who specialises in treating children's eyes

Other healthcare professionals may also be involved, such as a paediatrician (a doctor who specialises in children's treatment).

Before the ophthalmologist examines your baby, they will apply drops to their eyes to dilate (widen) the pupils (the black circle in the middle of the eye). The drops will not hurt your baby, and the effect will wear off after a few hours.

The ophthalmologist will then examine your baby's eyes using an ophthalmoscope (a medical instrument that has a light on the end and produces a magnified image of your eye). This shines a bright light into your child's eyes and enables the ophthalmologist to look inside them.

The ophthalmologist may diagnose cataracts if:

They can see the cataracts in the lens.

The examination shows a poor "red reflex" in the pupil.

The red reflex is like a reflection from the back of the eye similar to the red eye effect sometimes seen in flash photography. If the examination shows no red reflex, or is weaker than usual, there may be cloudiness in the lens.

Other tests

If there is no family history of childhood cataracts, your ophthalmologist may also suggest some other tests to identify the cause of the cataracts and confirm the diagnosis. For example, your child may have:

blood tests

urine tests

Treating childhood cataracts

Cataracts in children do not always need to be treated if they are not causing problems. Surgery is used to treat cataracts affecting vision.

If your baby or child has cataracts, need for treatment may depend on:

whether one or both eyes are affected

how mild or severe the cataracts are

Childhood cataracts are rare, so it can be difficult to predict how much a child's vision will be improved by treatment.

Cataracts in babies and children may be treated by:

using surgery to remove the cloudy lens and replacing it with an artificial lens

wearing glasses

wearing contact lenses

a combination of these treatments

Surgery

Cataract operations for babies and children will take place in hospital under general anaesthetic (a painkilling medication that makes you unconscious). The operation will be performed by an ophthalmologist (a medical doctor who specialises in eye disease and its treatment or surgery).

If the cataracts are present from birth, the operation will be carried out as soon as possible, usually a few weeks after your baby is born.

Before the operation, the ophthalmologist will apply drops to the eye to dilate (widen) the pupil (the black part at the centre of each eye). A very small incision (cut) is made in the surface (cornea) at the front of the eye, and the cloudy lens is removed.

Without the lens, the eye cannot focus. To correct this, the natural lens may be replaced with a clear plastic lens. This is called an intraocular lens (IOL) or intraocular implant.

Sometimes, a contact lens on the eye's surface may be used instead of an IOL. This will be fitted one-to-two weeks after the operation. This may be particularly useful in babies and children with anterior uveitis.

There is a higher risk of complications and further surgery being needed in babies who have an IOL inserted.

After the operation

After the operation, a pad will be placed over the eye to protect it. Babies under the age of three months old will probably need to stay in hospital overnight due to the anaesthetic. You may be able to stay with them. Older children usually go home after the operation.

If your child has cataracts in both eyes (bilateral cataracts), the ophthalmologist will probably operate on each eye separately. You and your child will be able to go home between operations. The second operation will be about a week later.

You will be given eye drops to give to your baby or child at home. These help reduce inflammation (swelling and redness) in the eye. You will need to put them into the eye every two-to-four hours, and you will be shown how to do this before you leave hospital.

Read more about cataract surgery.

Further treatment

Most children will need to wear:

glasses or contact lenses to improve their vision: these will probably be fitted a few weeks after the operation

a patch over their eye: this is called occlusion therapy (see below) although sometimes drops can be used to blur vision in the stronger eye rather than wearing a patch

Contact lenses can be used in babies as well as older children. You will be taught how to insert the contact lenses for your child, and how to look after the lenses.

### Occlusion therapy

In occlusion therapy, the stronger eye (the eye that sees best) is covered with a patch. This means that the child only uses the weaker eye to see. This treatment aims to improve vision in the weaker eye. It makes the brain recognise the visual signals from that eye and improves the images it sees.

Your doctor will tell you when your child should wear the patch and how long they may need it for. This will depend on the type of cataract your child had, and how weak their vision is. Wearing a patch can be an unpleasant experience for your child, and they will need lots of encouragement to keep it on.

### Complications of childhood cataracts

Although cataract surgery is very successful, some children may experience complications and need further treatment. All children will need to wear glasses after the operation.

Even if a child's cataracts can be treated successfully, improvement to their vision may be affected by other eye conditions. For example, lazy eye (amblyopia) is an early childhood condition where vision does not develop properly. This will need further treatment, usually by wearing a patch (occlusion therapy) or using eye drops.

### Complications from surgery

#### Cloudy vision

The most common risk associated with cataract surgery is developing a condition called posterior capsule opacification (PCO). This is where part of the lens capsule (the "pocket" that the lens sits inside) thickens

and causes cloudy vision. This is not the cataract returning, but is due to cells growing over the back of the artificial lens.

PCO is common, affecting up to half of all people who have cataract surgery. PCO usually develops between six months and five years after the operation.

If this happens, your child may need another operation to correct it. This will be done with laser eye surgery (when energy beams are used to cut through part of the eye). During laser eye surgery, the cloudy part of the lens capsule will be removed, with enough left to continue holding the artificial lens in place.

This procedure should only take around 15 minutes, and vision should be improved immediately or within a few days. As no surgical incisions or stitches are necessary, your child can usually return to their normal activities straight away.

#### Other complications

Other complications can arise from an operation to remove childhood cataracts. The Royal National Institute for the Blind (RNIB) estimates that these complications occur in around 2% of cases. These can include:

glaucoma: increased pressure inside the eye, which affects vision

squint (strabismus): a condition where one eye turns inwards, outwards, upwards or downwards, while the other eye looks forwards

abnormalities affecting the pupil (the black circle at the centre of each eye)

retinal detachment: when the retina (the layer of nerve cells inside the back of the eye) becomes separated from the inner wall of the eye

infection: for example, endophthalmitis (a rare bacterial infection)

If your child has any signs of pain, bleeding, a lot of stickiness or redness in or around the eye after surgery, contact the hospital immediately.

#### Cystoid macular oedema

One possible complication that can cause loss of vision is cystoid macular oedema. This is where fluid builds up between layers of the retina (the layer of nerve cells that lines the inside of the back of the eye).

There are two different types of cystoid macular oedema:

angiographic cystoid macular oedema

clinical cystoid macular oedema

Angiographic cystoid macular oedema is common, but does not affect vision. Clinical cystoid macular oedema can cause vision loss and makes up between 0.1% and 12% of cases.

Cystoid macular oedema may be treated with non-steroidal anti-inflammatory drugs (NSAIDs), although it's notable that research into this is still continuing.

### Wearing glasses

The natural lens in your eye can change shape. This is how it enables your eyes to focus on objects both near to you and further away.

Fixed strength (monofocal) and multifocal replacement plastic lenses can't do this. After cataract surgery, your child may also need reading glasses or glasses for distance vision.

All children will usually need to wear either contact lenses, glasses or both after cataract surgery. Often, babies can have contact lenses for the first two years or so until the eye "grows into" the intraocular lens (IOL). Multifocal IOLs are rarely used in babies or children.

### Preventing childhood cataracts

Childhood cataracts that are inherited (run in the family) can't be prevented.

### Pregnancy

If you're pregnant, follow the advice of your midwife or DOCTOR to avoid infections during pregnancy.

If you want to try for a baby, but don't know whether you are immune to rubella (German measles), ask your DOCTOR to check your immunity. If necessary, you can be vaccinated against rubella with the MMR vaccine (a vaccine that prevents measles, mumps, and rubella).

After having the MMR vaccine, make sure you avoid becoming pregnant for one month afterwards.

### Genetic counselling

If you have previously had a baby with childhood cataracts, and are planning another pregnancy, you may wish to speak with your DOCTOR about whether genetic counselling would be appropriate.

Genetic counselling can help couples who may be at risk of passing a genetic condition (a condition inherited from a family member) onto their child.