

# For Your Eyes Only

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## Introduction

People often value their eyesight as the most important of the senses. Sadly, every year many people suffer loss of vision that could have been prevented.

Over half of all sight loss could be prevented or treated. This means millions of people could avoid losing their most precious sense every year.

This happens for many reasons, such as people believing, if they can see well, that they have healthy eyes or not noticing a gradual change in their vision. Other people believe changes in vision are just due to age and some think visual problems will go away without taking any action.

The fact is many eye problems only give symptoms (signs you have a problem) when they have been present for a while and when damage may already have been done.

So this booklet was created to help people better understand the most common eye disorders and more importantly to remind us all:

- Regular eye checks are a vital part of our general healthcare.
- Eye tests are not just about glasses. Sometimes poor sight may be due to something else that needs medical investigation.
- No matter how small an eye problem seems, always visit a qualified eye care professional (ECP) for advice sooner rather than later.

While there is no substitute for regular eye tests, certain eye conditions have characteristic signs and symptoms that if you experience or notice, you should have your eyes checked.

The good news is that many eye problems can be treated and the sooner you take action, often, the better your eyesight will be. Remember, ignoring the problem can be the worst thing to do. Together, we can reduce the number of people that lose their sight through the sharing of knowledge and seeking advice as early as possible.

### Self care and supporting colleagues

The most common symptom that people experience is blurred vision. For example, if you suffer from blurred vision when watching TV, driving or reading a book, this might mean that you need spectacles or contact lenses but equally it could indicate an underlying eye condition that merits attention.

Other symptoms that merit prompt attention are pain in the eye (especially if also red), double vision, flashes and floaters in your vision. If you experience any of these, do not delay, visit your ECP to have your eyes checked.

Looking after your eyes in the workplace will often require eye protection from foreign bodies, for example if working in an industrial or agricultural setting. Your employer has specific responsibilities in this respect and you should speak to your HR Department if you feel that you require specific or updated eye protection (goggles, visors, etc). Once provided it is your responsibility to always wear this and to remind colleagues to also do so (see Accidents and Prevention for further information).

VDU users regularly complain of tired eyes or blurred vision when working. Men approaching middle age may have specific problems in this respect. A specific pair of VDU spectacles can offer greater comfort for prolonged VDU use and under EU law should be part or fully funded by your employer.

Dry eye is another common complaint and it may occur for many reasons. It is useful to think about these as four main groups:

- There are not enough tears being produced.
- There are enough tears but they do not last as long as they could.
- The components of the eye are not working together effectively.
- Your environment could cause dry eye.

Typical symptoms of dry eye can include:

- Blurry vision – often this improves on blinking but the vision may vary throughout the day.
- Dry and/or sore eyes.
- A foreign body sensation – people may feel there is something in the eye.
- People may actually complain of watery eye, this is because the tears normally protect the sensitive part of the eye – the corneal nerves – from being stimulated. With poor tears the cornea can become sensitive and sends a signal to the brain to make more tears and people get this paradoxical symptom of watery eye.
- Burning sensation – this happens because the tears are not covering the surface of the eye as well as they could.

It is common that people with dry eye first attend the pharmacy or doctor to get eye drops. However, as you can see, dry eyes may not always be improved with eye drops. It is always best to see your eye care professional so they can find the cause of the dry eye and recommend the best course of action to help you.

# Accidents and prevention

## Eye injuries

The saying goes 'accidents happen' and indeed they do. Sadly for us, most parts of our eye are very sensitive to injury, so it is important to really avoid injuries in the first place.

You see, when you get a knock on the arm, or cut your finger, your skin may bruise or scar. In the long run you may not even be left with any signs you ever had an accident. However, with eyes this can be very different. Scars can impair your vision and heavy blows can damage the structures of your eye, leading to immediate problems with vision or increasing your risk of long term complications.

In health we have a saying that 'prevention is better than cure' and nowhere else is this more true than with eye injuries.

We can sometimes find ourselves about to use a saw or play a game of squash without ever thinking of goggles. In eye casualties we often hear 'I only was doing it for a bit', but accidents happen quickly so we must plan ahead and protect against risks.

Here are some common examples of why considering eye protection before you do activities can save your sight.

- **Cutting materials:** Debris can fly off in all directions; if high speed debris hit the eye they can cause pain and also damage vision. By wearing the correct goggles this could be prevented.
- **Using chemicals:** Splashes from chemicals can quickly cause immense damage to structures of the eye. Using appropriate eye protection can reduce this risk. Likewise, if you get any liquid in the eye, immediately irrigating (washing out) the eye can minimise damage. You should do this with copious amounts of water or saline for several minutes and then immediately seek advice from a eye care professional.
- **Playing sport:** Squash is a particularly risky sport when it comes to eye injuries. This is because the ball is small and can fit into the gap between the bone structures that protect your eyeball. Squash injuries cause great damage to the eye, sometimes resulting in permanent loss of vision. Wearing the correct eye protection would avoid this and yet allow you to enjoy the sport. Remember to always ask your local eye care professional (ECP) for advice on eye protection for any sport.

### **Key points**

We never know an accident is about to happen, so we have to plan what we can do to reduce risk. Think about how you and your eyes may be at risk when you take part in all activities. Speak with your local eye care professional about eye protection and advice. These simple steps could save your sight.

### **Reducing the risk of driving accidents**

As well as injury to the eye, it is important to remember that our eye health and vision can also impact the health and wellbeing of others. This is particularly true when driving, as having good vision can help reduce the risk of road accidents. It is important to have regular eye exams and to wear glasses or contact lenses when they are advised. Something as simple as wearing glasses can help you avoid an accident and save lives.

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## Age-Related Macular Degeneration (AMD)

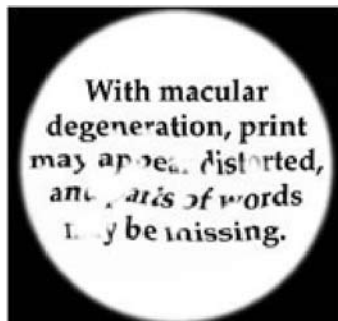
Macular degeneration is painless and, as it creeps up on you, most people don't realise there is a problem until they notice difficulty reading or driving.

It is dangerous for exactly these reasons, you tend to lose sight of what is right in front of you, 'central vision'. Although central vision is diminished, the vision around the centre is not damaged by AMD, this means it is still possible to see objects outside the area affected. Some people call this 'side vision'.

This means you do not go completely blind and there is also much better news so read on...

### How do you know if your eyes are affected?

There may be nothing to notice for a while until the disease is quite advanced, so regular eye checks are a good idea. Most people in the early stages might notice a slight blurring of vision but as the disease advances book print becomes less sharp. Some people have 'blind spots'. Later on, objects may seem distorted and straight lines may appear kinked. Patients may report missing words or a large central blur when attempting to read. Eventually, it is impossible to read straight on and people try to use their 'side vision' by flicking their eyes back and forth.



### What goes wrong?

The back of the eye (the retina) picks up the light entering the eye and sends the 'view' down the optic nerve to the brain which 'sees' what you are looking at. We are obviously most interested in what is directly in front of us so the retina is most sensitive to light in the middle, central part called the *macula*.

Problems with this part of the eye come in two main forms:

- Dry macular degeneration (also called non-neovascular) comes on much slower so is usually diagnosed later as people tend to 'get used' to the loss of sight and put it down to getting older.
- Wet macular degeneration (also called neovascular) affects your vision more quickly than dry macular degeneration.

Fortunately by far the most cases of macular degeneration are the dry form.

### How common is it?

- People over 50 are most likely to suffer from age-related macular degeneration (AMD). Around one third of people over 75 years have early signs of AMD, and of those about 7 out of a hundred will be severely affected. Around 14 million people in Europe suffer from poor vision as a result of this increasing problem as we all live longer.
- Whilst more women suffer from AMD, as we all live longer the number of men affected by AMD is likely to increase.
- Smoking is associated strongly as a risk factor for developing AMD. Stopping smoking can reduce your risk of AMD and sight loss.



- Macular degeneration in young people is rare, and is usually caused by a genetic condition.
- Although AMD is the leading cause of poor vision, almost everyone affected will have enough peripheral vision to continue their daily activities.

### ***Eye opener***

Mix a cup of blueberries with a cup of yogurt for breakfast in the morning. Blueberries are one of the richest fruit forms of antioxidants, and a study published in *The Archives of Ophthalmology* found that women and men who ate the greatest amount of fruit were the least likely to develop age-related macular degeneration (AMD), the leading cause of blindness in older people.

### **What can be done about it?**

In recent years there have been very positive advances in the treatment of wet-AMD. This means it is even more important than ever, that if you suffer from symptoms of wet-AMD you visit an eye care professional straight away. In the past people with wet-AMD would suffer a quick loss of vision and little could be done. Today, there are new drugs known as anti-VEGF treatments and these can not only stop progression of wet-AMD in many people, but in some cases, may even help restore some of the lost vision. However, treatment must be started as soon as possible to minimise the risk of permanent sight loss.

Whilst there is no current treatment for dry-AMD, it is important to have regular eye exams. Your ECP will be able to monitor your dry-AMD and give advice on vision correction. In addition they will be able to update you on current research and risk factors that may help reduce the risk of your dry-AMD developing into wet-AMD.

### ***Treatments for wet-AMD***

Wet-AMD is caused by new blood vessels that leak. Historically, argon laser was used for the treatment of wet AMD. This was surpassed by photodynamic therapy which then became the predominant treatment choice with the aim to preserve vision for patients.

Since the launch of the first licensed anti-VEGF (anti-vascular endothelial growth factor) drug therapy in 2006 in the United States the treatment goal has shifted to actually improving vision in a significant proportion of patients by reversing vision loss. Anti-VEGF treatment, given by injection, works by stopping new blood vessels from forming and leaking, and has become the standard-of-care in the treatment of wet AMD.



# Macular holes

A macular hole is very different from macular degeneration.

The very centre of the retina is the bit which works hardest to give sharp clear focus. Not surprisingly this area of the retina has the highest concentration of cells picking up light. A 'hole' can form in exactly this vital part of the retina causing problems with reading and driving. Although macular holes usually affect one eye, there is about a 1 in 10 chance the other eye may also at some point be affected.

Just why it develops no one is really sure, nor do we know how to prevent it but thankfully there are treatments now.

## What happens inside the eye?

The majority of macular holes occur when the jelly (the vitreous) inside the eye moves away from the back of the eye (the retina). This process is known as a posterior vitreous detachment (PVD). Whilst the majority of PVDs result in no further problems, some can cause symptoms and require further investigation (see Floaters and flashes and Retinal detachment).

In a few cases of PVD the macula is pulled on and this starts the process of the hole formation.

The formation of a macular hole is divided into four stages. At stage one it is difficult to detect and at stage 4 the hole tends to be mature and vision reduced. It is important that if you have any symptoms you see your ECP. Also if you have had a macular hole in one eye, there is a 15% chance the other eye will also develop a hole within five years. So regular exams are important.

Sometimes it may be possible to see changes at the back of the eye that point to an increased risk of macular hole developing. Your ECP may perform further tests to see if you are at risk.

There are also other types of macular hole, for example as the result of being very short-sighted and trauma.

## Effect of a macular hole on vision

Central vision is most affected. These changes can range from straight lines looking wavy in the early stages to a small blank, 'missing' patch in the centre of vision in the late stages. People may first notice that they have trouble reading small print or that there is distortion when they look at a printed page.

It's important to know that in the early stages it is possible for macular holes to heal themselves. Eye specialists may wait to see how effective this is before starting treatment.

### What can be done about it?

The macula needs to lie flat on the back of the eye to receive, through blood vessels, all the nourishment it needs to work properly. Surgery can help.

There are currently two main stages to the treatment:

- **Surgery.** Removing part of the vitreous jelly and inserting a gas bubble which presses the macula back against the back of the eye. It is eventually absorbed but vision is always disturbed until this happens.
- **Rest period.** It is very important that after surgery patients follow the advice given. For example, it is vital that for a certain period of time, patients follow a strict routine of head positioning. This is to make sure the gas bubble is able to do its job properly.

### What you can expect

In many cases surgery can stop the visual disturbances getting worse and can help sight to recover to a high standard. The operation also removes the chance of the retina detaching and so can be important in stopping more sight loss. But...

There are two main complications associated with the operation.

- **Cataracts.** Almost everyone that has this operation will develop a cataract (see page 11).
- **Retinal detachment.** When the jelly is peeled from the retina there is a chance that the retina may detach away from the back of the eye (see page 24).

# Cataracts

Clouding of the lens in the eye most often comes on with ageing and are very common in later years. Around half of people over 80 yrs either have a cataract or received treatment for it.

## ***Myopic Myth?***

*You can 'catch' a cataract and they can spread to both eyes.*

**Focussed Fact.** Cataracts can occur in either or both eyes, but not only can you not be infected by other people with cataracts they don't 'spread' from one eye to the other. However, it is not uncommon to develop a cataract in both eyes at the same time, or to subsequently develop one in the second eye.

## **The lens**

Most of the job of focussing is done by the front of the eye (cornea) but this is adjusted by the lens to give a clear image on the back of the eye (retina) especially when close up.

Obviously, the lens must be perfectly clear or vision will be less sharp or even lost completely.

## **What causes cataracts**

There are many types of cataract and they can occur for different reasons, here are the main types:

- **Age-related cataract:** This is by far the most common cause of cataract and simply occurs due to age. It is not a disease but occurs as a result of a normal aging process.
- **Secondary cataract.** Cataracts can form after surgery for other eye problems, such as glaucoma. Cataracts also can develop in people who have other health problems, such as diabetes. Cataracts are sometimes linked to steroid use.
- **Traumatic cataract.** Cataracts can develop after an eye injury, sometimes years later.
- **Congenital cataract.** Some babies are born with cataracts or develop them in childhood, often in both eyes.
- Long exposure to strong sunlight (fishermen, postal workers, farmers).

## How does it affect vision?

While the cataract is small, you may not notice any changes in your vision. Cataracts tend to 'grow' slowly, so vision gets worse gradually. Over time, the cloudy area in the lens may get larger, and the cataract may increase in size and vision may get duller or blurrier.

As the clear lens slowly colours with age, your vision gradually may acquire a brownish shade. At first, the amount of tinting may be small and may not cause a vision problem. Over time, increased tinting may make it more difficult to read and watch TV. This gradual change in the amount of tinting does not affect the sharpness of the image transmitted to the retina but with severe tinting blues and purples become hard to recognise separately. 'Black' pullovers and socks often turn out to be blue!

During middle age, most cataracts are small and do not affect vision. It is after age 60 that most cataracts make their presence felt.

Watch out for:

- Headlights, lamps, or sunlight appearing too bright or with a halo.
- Poor night vision.
- Double vision or multiple images in one eye.
- Having to change your glasses or contact lenses.



**Myopic Myth?**

*Reading in poor light or prolonged reading of very fine print will ultimately harm your vision.*

**Focus Fact.** Although reading in dim light is unwise because it may cause your eyes to feel tired or uncomfortable, it can't hurt your eyes. Similarly, reading small print or reading extensively cannot cause damage to the eyes. This is true even for people who already have poor vision. The eyes are meant to be used!

**What helps to prevent it?**

- Wearing sunglasses and a hat with a brim to block sunlight may help to delay cataracts.





- Quit smoking.
- Good nutrition with plenty of green leafy vegetables, fruit, and other foods with antioxidants may help reduce the risk of age-related cataract.

## Treatment

Treatment is simple and excellent. Have regular eye checks. Eye care professionals (ECP) will pick it up very easily and quickly.

Surgery is likely to be required eventually.

A cataract needs to be removed as soon as vision loss interferes with your everyday activities, such as driving, reading, or watching TV. You and your eye care professional can make this decision together. Once you understand the benefits and risks of surgery, you can make up your own mind about whether cataract surgery is right for you. In most cases, delaying cataract surgery will not cause long-term damage to your eye or make the surgery more difficult. You do not have to rush into surgery.

Sometimes a cataract should be removed even if it does not cause problems with your vision. For example, a cataract should be removed if it prevents examination or treatment of another eye problem, such as age-related macular degeneration or diabetic retinopathy. If your eye care professional finds a cataract, you may not need cataract surgery for several years. In fact, you might never need cataract surgery. By having your vision tested regularly, you and your eye care professional can discuss if and when you might need treatment.

### **Myopic Myth?**

*A cataract must be 'ripe' before it is removed.*

**Fact.** With older surgical techniques, it was thought to be safer to remove a cataract when it was 'ripe.' With today's modern surgical procedures, a cataract can be removed whenever it begins to interfere with a person's lifestyle.

### **Cataract surgery**

If you have cataracts in both eyes that require surgery, the surgery will be performed on each eye at separate times, usually four to eight weeks apart.

Many people who need cataract surgery also have other eye conditions, such as age-related macular degeneration or glaucoma. If you have other eye conditions in addition to cataract, talk with your doctor. Learn about the risks, benefits, alternatives, and expected results of cataract surgery.

There are two types of cataract surgery:

- **Phacoemulsification, or phaco.** A small cut is made on the side of the cornea, the clear, dome-shaped surface that covers the front of the eye. Your doctor inserts a tiny probe into the eye. This device emits ultrasound waves that soften and break up the lens so that it can be more easily removed. Most cataract surgery today is done by phacoemulsification, also called 'small incision cataract surgery.'
- **Extracapsular surgery.** Your doctor makes a longer cut on the side of the cornea and removes the cloudy core of the lens in one piece. The rest of the lens is then removed by suction.

After the natural lens has been removed, it often is replaced by an artificial lens, called an intraocular lens (IOL). An IOL is a clear, plastic lens that requires no care and becomes a permanent part of your eye. Light is focused clearly by the IOL onto the retina, improving your vision. You will not feel or see the new lens. After standard cataract surgery you will require glasses. However, advanced technology intra-ocular lenses (ATIOLs) enable you to live without glasses after cataract surgery. Ask your doctor for more information.

Some people cannot have an IOL. They may have another eye disease or have problems during surgery. For these patients, a soft contact lens, or glasses that provide high magnification, may be suggested.

Cataract removal is one of the most commonly performed operations. It also is one of the safest and most effective types of surgery. In about 90 per cent of cases, people who have cataract surgery have better vision afterward.

***Myopic Myth?***

*Using computers can damage your eyes.*

**Fact.** Working on computers or video display terminals (VDUs) will not harm your eyes. Often, when using a VDU for long periods of time, just as when reading or doing other close work, you blink less often than normal. This reduced rate of blinking makes your eyes dry, which may lead to the feeling of eyestrain or fatigue.



# Diabetic Retinopathy

Damage to the back of the eye (the retina) from high blood sugar levels is unfortunately a common problem for people with diabetes. If it is not treated, it can lead to blindness so it is important to keep diabetes under tight control.

For this reason, everyone with diabetes who is 12 years old or over should have their eyes examined once a year for signs of damage.

## What goes wrong?

Cells in the retina pick up light and send 'vision' to the brain. Like any other part of the body it needs a constant blood supply. Over time badly controlled diabetes can block the blood vessels which supply the retina, or make them 'leaky'. Sometimes the tiny blood vessels actually grow out of the retinal surface blocking light getting to the cells beneath them. In the end, these changes to the back of the eyes can result in damage to vision and even lead to blindness.

Diabetic macular edema (DME) is the most common cause of visual impairment for people with diabetic retinopathy. DME is characterized by leakage from the blood vessels in the macula, the central portion of the retina. As this part of the eye is responsible for sharp central vision, DME can lead to significant visual impairment.

## How do you know it is happening?

All of this happens slowly and the brain is very good at 'filling in the gaps' so most people don't realise there is a problem until it has become serious enough to cause things like:

- Shapes floating in your field of vision (floaters).
- Blurred vision.
- Reduced night vision.
- Sudden loss of vision in one eye or both.

Unfortunately, this means there is already damage taking place and you need to see your doctor as soon as possible for treatment.

## Diabetic retina screening

Regular checks each year are vital and can save your sight, especially if the problem is caught early. The longer a person has diabetes the greater the risk from retina damage.

The checks are simple, quick and painless. The pupil is dilated with eye drops. (this can cause blurred vision anyway so do not drive to the test centre). Using a special 'telescope' the back of the eye can be easily seen and checked for any damage.

### What can be done about it?

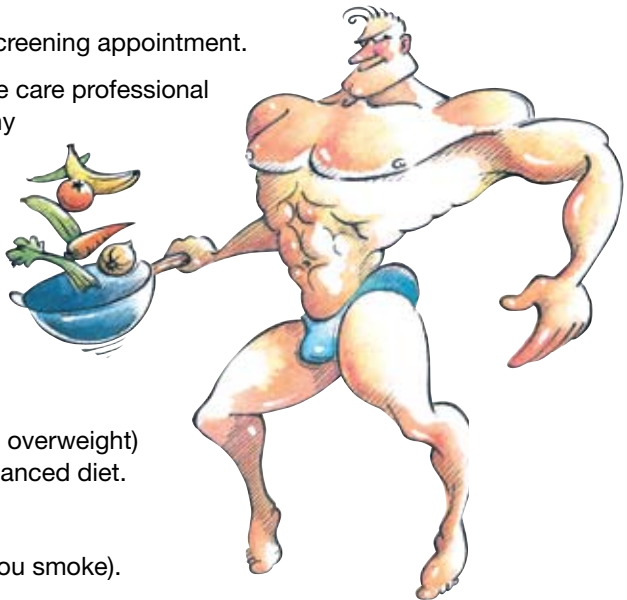
Fortunately there are treatments but they will depend upon how seriously the retina is damaged.

Early stages can be treated by better diabetes control. More serious damage may need laser surgery to prevent any further loss of vision. This is a painless way of tiny pinpoint burning of the 'leaky' or wrongly growing blood vessels.

### Can it be prevented?

Yes, mainly by better diabetic control and treating any high blood pressure. So therefore it is important to:

- Avoid using too much salt when preparing your food and not to add even more when eating.
- Attend your annual screening appointment.
- Inform your GP or eye care professional (ECP) if you notice any changes to your vision (do not wait until your next screening appointment).
- Take your medication as prescribed.
- Lose weight (if you're overweight) and eat a healthy, balanced diet.
- Exercise regularly.
- Give up smoking (if you smoke).



## Dry eye

### ***Eye openers***

- The human eye blinks an average of 4,200,000 times a year.
- Each of our eyelashes has a life span of approximately five months.

In the great scheme of things having dry eyes doesn't sound too bad but for some people it can leave the eyes red and itchy. This not only looks as though there is something seriously wrong, it can be painful as well. Dry eye syndrome, or dry eye disease, occurs when the eyes do not make enough tears, or the tears evaporate too quickly as the oil glands are blocked or abnormal.

Blinking leaves a thin layer, called the tear film, over the front of the eye. The tear film keeps the front of the eye healthy and it also helps the eye focus properly, giving clear vision. Not enough tears, or if tears aren't of the right quality or the tears aren't spread across the front of the eye properly, will all help produce a 'dry eye'..

What it feels like depends very much upon how bad the condition is or what is causing the dryness but includes:

- Dry or sore eyes.
- Blurred vision.
- The feeling of something in your eye like an eyelash or grit.
- Burning.
- Watering.

Other things can cause these symptoms so see your doctor if they are getting worse or lasting for more than a few days. They may examine you for other conditions or may refer you to an eye care professional (ECP) for further tests.

### **What causes it?**

There can be a number of causes including:

- Being in a hot or windy climate.
- Certain chronic diseases.
- Side effects of medicines.
- Hormonal changes.

However, simply getting older seems to affect the amount of tears produced and also how they stay on the eye. Up to a third of people aged 65 or older may have dry eye syndrome. Some people find their tears spill over instead of keeping their eyes damp.

### **What can be done about it?**

Dry eye syndrome is not usually a serious condition unless it is due to inflammation or certain diseases where there is an overactive immune system. Steps can be taken to relieve the symptoms including:

- Treating the medical problem if there is one.
- Using special drops to lubricate the eye.
- Wearing specialised eyewear.

In severe cases, dry eye syndrome may be treated with surgery to block the drainage tear ducts. This is either with temporary plugs or by permanently sealing the drainage hole.

### ***Self-help***

- Keep your eyes and eyelids clean and protect them when in dry or dusty places.
- Use your computer or laptop correctly to avoid eye strain.
- Use a humidifier to moisten the air.
- Avoid air conditioning or sitting directly in front of a fire.
- Eat a healthy diet.

### **What are the risks of being affected?**

Dry eye syndrome is unfortunately common. It tends to affect people above 60 years of age, but it can affect younger people. It is also more common in women than men.

It does not usually affect vision. In rare cases, severe untreated dry eye syndrome can cause scarring of the eye's surface, blurring vision

Dry eye doesn't usually cause long term problems with your sight but it is important to let someone know if your eyes are feeling dry, gritty and sore. Your GP may be able to help or they may recommend that you have your eyes examined either by an ECP or an eye specialist (ophthalmologist).

In most cases, dry eye just results in mild discomfort but in more severe cases it can become very painful and the dryness can cause permanent damage to the front of the eye. The severity of the problems depend very much on the cause of the dry eye. Once you have dry eye you tend to always be prone to it, but it can be treated. Usually there are times when it is better than others. Medically, dry eye is known as keratoconjunctivitis sicca.

Tears may also be affected by:

- Some drugs, like antihistamines or oral contraceptives.
- Contact lenses can increase the risk; follow the advice for wearing and looking after them very carefully.
- Other health problems, such as rheumatoid arthritis.
- Sjögren's syndrome, which may cause dry eye and a dry mouth.
- Surgery or an accident which affects or scars the eye, although this usually improves once the eye has healed.
- An infection or inflammation of any of the glands around the eye, or an infection of the eye lash roots (called blepharitis). Sometimes getting rid of the infection or inflammation can help to improve your dry eye.

### ***Eye opener***

Tears are drained through the tear ducts, small drainage holes that connect the eye lids to the inside of the nose. This is why when you cry, sometimes your nose runs too.

### ***Eye opener***

Tears are not all the same, they are a mixture of different solutions and this mix changes depending on what the tears are for.

Emotion, peeling onions or an injury, such as a poke in the eye, will cause the body to produce lots of extra 'watery' tears. These tears are designed to wash away anything that may be in the eye.

Emotion also causes extra tears. These very watery tears drain away quickly and do little to soothe a dry eye. This over-watering of the eye won't damage the eye, though it may make the sight blurry while it's happening. Feet slipping off the pedals on a bike with a cross bar are a sure cure for dry eyes but can also make your vision blurred for a few minutes.



***Myopic Myth?***

*Eating carrots will improve your vision.*

**Fact.** This myth possibly originated because carrots contain vitamin A, which is necessary for sight. The vitamin A in carrots alone – while nutritional – has relatively little effect on improving vision. However, the pigment in carrots (and other orange hued roots) contains beta-carotene an important biological molecule involved in ophthalmological biosynthetic processes that are critical to proper functioning of cone cells (the cells that enable vision).

***Myopic Myth?***

*Wearing glasses tends to weaken the eyes.*

**Fact.** People who have been able to read easily close up without glasses may find that they cannot do so as they get older (past 40). When they begin to need stronger and stronger glasses, they may assume that wearing glasses has ‘ruined’ their eyes. In actuality, they are experiencing a normal condition called presbyopia – the inability of the aging eye to focus on near objects. When children become near sighted (myopic), usually between the ages of 8 and 12, there is a natural progression in their myopia and a need for a stronger correction over the next few years. These children, as well as near sighted adults, may believe that glasses have weakened their eyes when their lens prescription needs to be made stronger. Glasses, however, do not weaken eyes; they are simply aids to improve vision.

***Myopic Myth?***

*Wearing glasses too much will make the eyes ‘dependent’ on them.*

**Fact.** Refractive errors (near-sightedness, far-sightedness, or astigmatism) change as people get older. Many variables come into play, but most of this change would continue despite wearing glasses earlier or later or more or less. Wearing glasses does not make the eyes get worse.

## Floaters and Flashes

One of the most common things which irritate people so much they will see an eye care professional (ECP) are floaters which drift in the vitreous jelly in front of the retina.

Most people will experience floaters at some time in their lives but they do get more common with age. They are usually harmless bits of protein floating in the vitreous gel but if they increase in number or vision is affected you must see an eye specialist. (See sections on retinal detachment and macular hole).

They can cause 'shadows' on the retina which infuriatingly swirl around as you move your eyes. Worse still they seem to have a mind of their own and no matter how you look they float back into view. Lying on your back looking at a light ceiling is perfect for noticing 'floaters' which means beds are never the same again.

### What causes them?

Unfortunately posterior vitreous detachment (PVD) is common with aging and means the vitreous gel has pulled away from the back of the eye, sometimes dragging away some of the cells from the retina. Flashing lights may occur when the outer part of the vitreous humour pulls on the light-sensitive tissue of the retina. The pulling stimulates the retina, causing your brain to interpret it as a light signal.

Floaters are also more common in people with:

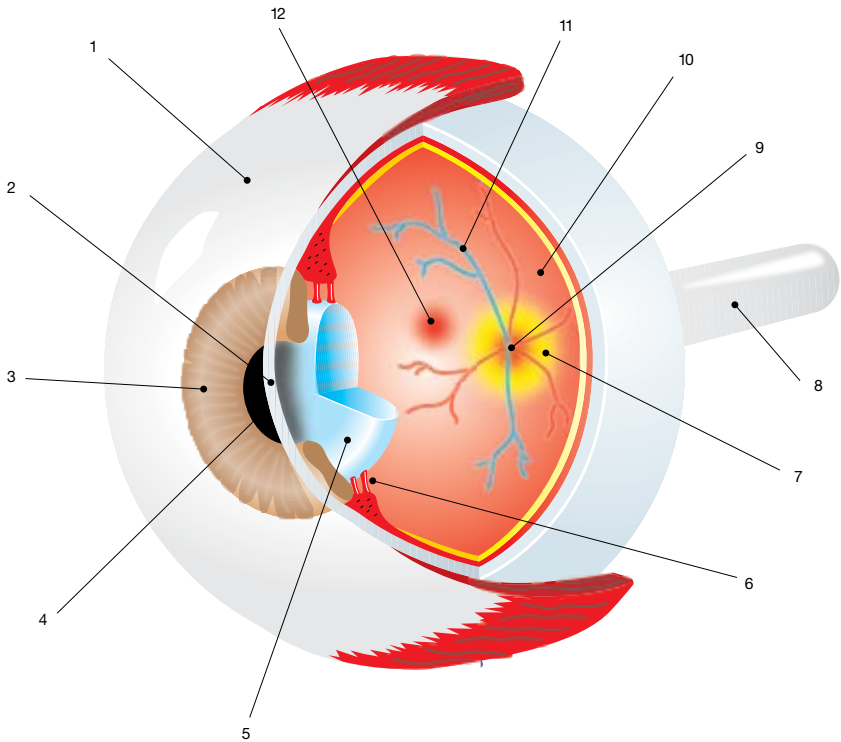
- Short-sightedness (myopia causes distant objects to appear blurred, while close objects can still be seen clearly).
- Diabetes.

# Retinal detachment

The retina needs to be attached to the back of the eye to survive and work properly, so if a retinal detachment is not detected and treated quickly it can result in the loss of some or all the vision in your eye.

In severe cases it is like a sheet of wall paper sliding away from a wet wall.

***If you have a sudden onset of any of the symptoms associated with retinal detachment such as floaters, flashing lights and/or a dark shadow across your vision in one or both eyes, you should see your eye health care professional as soon as possible.***



- |          |               |                 |                  |
|----------|---------------|-----------------|------------------|
| 1 Sclera | 5 Lens        | 8 Optic nerve   | 10 Retina        |
| 2 Cornea | 6 Zonules     | leaving the eye | 11 Retinal blood |
| 3 Iris   | 7 Optic nerve | 9 Optic nerve   | vessels          |
| 4 Pupil  | head (disc)   | cup             | 12 Macula        |



## What happens in the eye?

Most retinal detachments happen because a tear or hole in the retina allows fluid to leak between the retinal layers and this then causes the retina to detach. Holes in the retina can occur because of changes that happen as you age, whereas tears happen because the retina has been pulled and torn. Tears can be caused for example, by a blow to the eye or if the vitreous gel suddenly becomes detached from the retina (known as acute posterior vitreous detachment or PVD – most gradual PVD does not result in retinal detachment).

Diabetic retinopathy can result in fibrous scar tissue forming inside the vitreous and on the surface of the retina. This scar tissue can then pull on the retina causing a detachment.

## Who is at risk?

Thankfully rare, it only occurs in about 1 in 10,000 people each year. It is even rarer under the age of sixteen and most commonly happens to people aged between 60 and 70 years.

It is more common with:

- Retinal tears.
- Macular holes (see page 9).
- Severe short sightedness.
- Blows to the eye.
- Family history of retinal detachment.
- People who have had eye surgery.

What to watch out for:

- **Flashing lights.** There is no way you can tell whether flashing lights are caused by your vitreous or by a retinal tear. If you suddenly experience flashing lights you should have your eye examined by an eye care professional (ECP) as soon as possible, usually within 24 hours.
- **Floaters.** A recent dramatic increase in the number of floaters or notice showers of dust-like floaters, this could be a sign that changes are happening at the back of the eye.
- **Dark shadow.** If your retina does detach then it can't work properly any more. You will see this as a dark shadow in the corner of your vision. If more of your retina detaches then the shadow will move towards the centre of your vision. If you experience a dark shadow moving up, down or across

your vision you need to attend your local eye clinic as soon as possible within the same day if possible or within 24 hours.

- **Blurring of vision.** Your vision can gradually become blurred for many reasons, you should see an ECP if it persists.

### What can be done to prevent it?

Prevention depends on what causes it so things like eye injuries can be avoided using protective eye wear during DIY, work, sport, etc. In certain cases regular eye exams may help detect if you are at risk of retinal detachment.



### What can be done about it?

Either freezing a tiny area of the retina around your retinal tear or hole from the outside of the eye, or using a laser which causes very small burns in the area around your retinal hole or tear, will prevent it expanding into a detachment.

Retinal detachment itself can often be treated. The treatment involves an operation to reattach the sensory retina to the underlying retinal pigment epithelium. The sooner treatment is carried out, the better the results. If retinal detachment is not treated then you will lose all the vision in the affected eye.

# Glaucoma

Glaucoma can occur when the drainage tubes within the eye become slightly blocked. This prevents eye fluid (aqueous humour) from draining properly and the pressure within the eye rises. Intraocular pressure (IOP) cannot be allowed to rise too high as it will damage the optic nerve.

Although glaucoma often affects both eyes, usually in varying degrees, one eye may develop glaucoma quicker than the other.

If left untreated, glaucoma can cause blindness. But if it is diagnosed and treated early enough, further damage to vision can normally be prevented.

## Types of glaucoma

There are three main types of glaucoma important for older men:

- **Chronic open-angle glaucoma.** This is the most common type of glaucoma and develops very slowly. Most people do not realise it is happening so regular checks are important.
- **Primary angle-closure glaucoma.** This is rare and can occur slowly (chronic) or may develop rapidly (acute) with a sudden, painful build-up of pressure in the eye.
- **Secondary glaucoma.** This occurs as a result of an eye injury or another eye condition, such as uveitis (inflammation of the middle layer of the eye).

Amongst white Caucasian Europeans, about 1 in 50 people above 40 years old and 1 in 10 people above 75 years old has chronic open-angle glaucoma. This form of glaucoma is also more common among people of African or black Caribbean origin.

The other types of glaucoma are much less common.

## Treatment

Glaucoma can be treated with eye drops, laser treatment or surgery. However, early diagnosis is important because any damage to the eyes cannot be reversed. Treatment aims to control the condition and minimise any future damage.

Attending regular eye care professional (ECP) appointments will help to ensure that any signs of glaucoma can be detected early and allow treatment to begin. Without treatment, glaucoma can eventually cause blindness.



## What goes wrong in the eye?

### ***Myopic myth?***

*High blood pressure will increase the pressure inside the eye.*

**Focussed fact.** There is no link between the two although high blood pressure needs attention as well.

Eyes need a certain amount of pressure to keep the eyeball in shape so that it works properly. However, if the optic nerve comes under too much pressure, its blood supply can be blocked, causing permanent damage. A great deal will depend on the pressure level and how long it lasts along with any other problems with the optic nerve at the time. A layer of cells behind the iris (the coloured part of the eye) produce a watery fluid called aqueous. This helps keep the various parts of the eye in good condition but if fails to drain away

through the trabecular meshwork the resulting pressure increase does exactly the opposite. Tears and the aqueous are totally different and not linked in any way.

## Primary open angle glaucoma (POAG)

It is not only the most common form of glaucoma, it can also creep up on you with a slow but steady rise in pressure. Your eye may seem perfectly normal and your eyesight will seem to be unchanged – because when the pressure starts to build up it doesn't cause you any pain and the brain fills in the 'gaps' but nonetheless your vision is still being damaged.

First to be affected is peripheral vision, around the edge of what can be seen when looking straight ahead. It starts as an arc of poor vision above and below gradually getting worse until it is very noticeable. This is when most people seek advice but damage is already taking place.

The centre of the visual field is affected last eventually producing 'tunnel vision'.

***Only regular eye tests can detect glaucoma before you notice any change to your vision. So visit your ECP to help avoid unnecessary loss of sight.***

### ***What increases the risk?***

- **Age.** POAG is much more common in later years.
- **Family history.** The closer the relative who suffered from glaucoma the greater the risk. If your parents or other close family were affected you need regular check-ups even though there is no guarantee you will develop the condition yourself.
- **Short sight.** The worse this is the higher the risk.
- **Diabetes.** As with some other eye conditions it increases risk and needs regular checking along with eye examinations.

### ***Checking it out***

Eye specialists will either perform these simple tests or refer you on for them. They are all straightforward and painless.

- Examination of the back of the eye (retina), especially the area around the optic nerve (optic disc).
- Measurement of pressure using a special instrument called a tonometer. This involves a machine which uses a few puffs of air in each eye to record

the pressure. Hospital specialists often use an instrument which touches the front of the eye after first using local anaesthetic.

- Checking visual field. This involves being shown a sequence of spots of light on a screen. It helps pick up loss of peripheral vision.

### ***What can be done about it?***

The main treatment for POAG aims to reduce eye pressure. Some treatments also aim to improve the blood supply to the optic nerve but all of them can only stop further damage so getting it checked out sooner is the name of the game.

Eye drops which reduce the amount of aqueous being produced will generally deal with smaller pressure rises. Like money in the bank they will pay off in the longer term by preventing any further damage but they must be used as directed and not stopped unless advised to do so.

More serious rises in pressure, especially coming on quickly, need more than just drops:

- **Laser to the drainage tubes.** This is the most common treatment and opens up the tubes allowing the aqueous to drain away.
- **Laser to the iris.** This creates a new drainage channel through the iris and can sometimes be used for POAG but is more commonly used to prevent pressure increases from other less common causes (eg. closed angle glaucoma).

Both types of laser treatment reduce pressure and will usually only need to be done once. Laser treatments sometimes need repeating but often just need doing once. They are minor surgical procedures performed under local anaesthetic as an outpatient.

### ***Surgery***

If eye drops and laser treatment cannot lower eye pressure and keep it stable then trabeculectomy surgery may be considered. Only five per cent of people with glaucoma require trabeculectomy surgery. This surgery creates a new, permanent drainage channel in the eye and lowers pressure.

## **Acute angle closure glaucoma**

Much less common than POAG, acute angle closure glaucoma happens when there is a sudden and more complete blockage to the flow of aqueous fluid from the eye. This is nearly always very painful and causes permanent damage if not treated promptly.

In acute angle closure glaucoma, the pressure in the eye rises rapidly. This is because the outer edge of the iris and the front of the eye (cornea) come into contact, which stops the aqueous fluid from draining away through the trabecular meshwork as normal. This can happen in one or both eyes but it is rare for both eyes to have an attack at the same time.

Watch out for:

- At first, misty rainbow-coloured rings around white lights.
- Severe pain in the affected eye. This is impossible to miss but can be put down to sinusitis or even a bad headache.
- 'Red eye'.
- Rapid loss of vision.
- Feeling very sick (nauseous).

***Acute glaucoma is an emergency and needs to be treated quickly if sight is to be saved.***

***What can be done about it?***

Getting it sorted ***as soon as possible*** is the name of the game and will almost always give complete and permanent recovery of vision. Go to a hospital emergency centre (A&E).

Laser or surgery of the iris will relieve the pressure immediately. The unaffected eye is sometimes also treated as there is an increased risk of another attack.

## Getting the best from your eye care professional (ECP)

Regular eye checks will help protect your vision from conditions which are either preventable or treatable. Some eye problems creep up on you unnoticed, so it's important to visit your ECP regularly even if your vision seems fine.

Eye examinations are painless and you can ask questions about your eyesight, particularly if you are worried over something you have noticed. To help you gain the most from your eye examination here are some tips:

- Don't be afraid to ask questions.
- Write down any questions, symptoms or problems with your eyes. Even things which might seem 'silly' may give clues to what is happening.
- Write a list or bring along any medicines you're taking (including 'herbal' and medicines bought from your pharmacist).
- It's very important to tell your ECP about any eye problems your close relatives may suffer from, especially glaucoma, macular degeneration or if they are diabetic and it affects their vision.

