

R N I B

See differently

Understanding

Dry Eye



The ROYAL COLLEGE of
OPHTHALMOLOGISTS

Contact us

We're here to answer any questions you have about your eye condition or treatment. If you need further information about dry eye or on coping with any sight problems you may have, then our Helpline is there for you.

Just give us a call on **0303 123 9999** or email us at **helpline@rnib.org.uk** and we'll be happy to speak with you.

RNIB's Understanding series

The Understanding series is designed to help you, your friends and family understand a little bit more about your eye condition.

The series covers a range of eye conditions, and is available in audio, print and braille formats.

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What is dry eye?

Dry eye is a very common eye condition that can affect anyone at any age and is caused by a problem with our tears. Medically, dry eye is known as keratoconjunctivitis sicca.

Dry eye can be divided into two main types:

- Evaporative dry eye – which is where the tears evaporate too quickly. This can be caused by problems with your eyelid, blinking, abnormalities in the oil secreting glands medically known as meibomian gland dysfunction (MGD), blepharitis, contact lens use, allergy and health conditions such as eczema and rosacea.
- Aqueous deficient dry eye – which is where there are not enough watery tears being produced. This often occurs as a result of conditions that affect your lacrimal glands which are the small glands located underneath your upper eyelid that produce most of your tears. Conditions that can affect the lacrimal gland include obstructions, infections, medications and medical conditions such as Sjögren's syndrome.

Although most cases of dry eye are evaporative, both forms of dry eye, evaporative and aqueous deficient can occur together.

There are many influencing factors that can cause dry eye and it can lead to a variety of visual symptoms which can affect your quality of life. However, there are many things that can be done to help you cope with dry eyes.

What are the symptoms of dry eye?

Dry eye can make your eye feel uncomfortable, red, scratchy and irritated. Despite the name, having dry eye can also make your eyes watery. Typically, dry eye doesn't cause a permanent change in your vision. It can make your eyesight blurry for short periods of time, but the blurriness will go away on its own or improve when you blink.

Normally, dry eye affects both eyes but sometimes one eye is affected more than the other. Often dry eye can make it feel like you've got something in your eye such as an eyelash or a piece of grit, even when there is nothing there. Your eyes may water more than usual. More information about watery eyes can be found in the next section.

Although dry eye doesn't usually cause long-term problems with your eyesight, it's important to let your general practitioner (GP) or optometrist (optician) know if your eyes are feeling uncomfortable, gritty and sore for long periods of time. Your optometrist or GP may be able to help by recommending eye

drops which act as replacement tears. They may also recommend that you have your eyes examined by an ophthalmologist (also known as a hospital eye doctor) if they feel your dry eye is severe.

Most of the time, dry eye just causes discomfort and can be well controlled with the use of eye drops. Once you have dry eye, you tend to always be prone to it, but you will probably find that there are times when it is better than others.

Very rarely, in severe cases, dry eye can be very painful, and the dryness can cause permanent damage to the front of your eye. The severity of these problems depends on the cause.

A rare condition called corneal neuropathic pain has the symptoms of dry eye along with extreme eye pain and light sensitivity but no signs of dry eye. When the doctor examines your eye, they are not able to see any, or very little, evidence of dry eye despite you having all the symptoms. This form of painful dry eye does not respond to eye drops and is managed with pain killers.

Why have I developed dry eye?

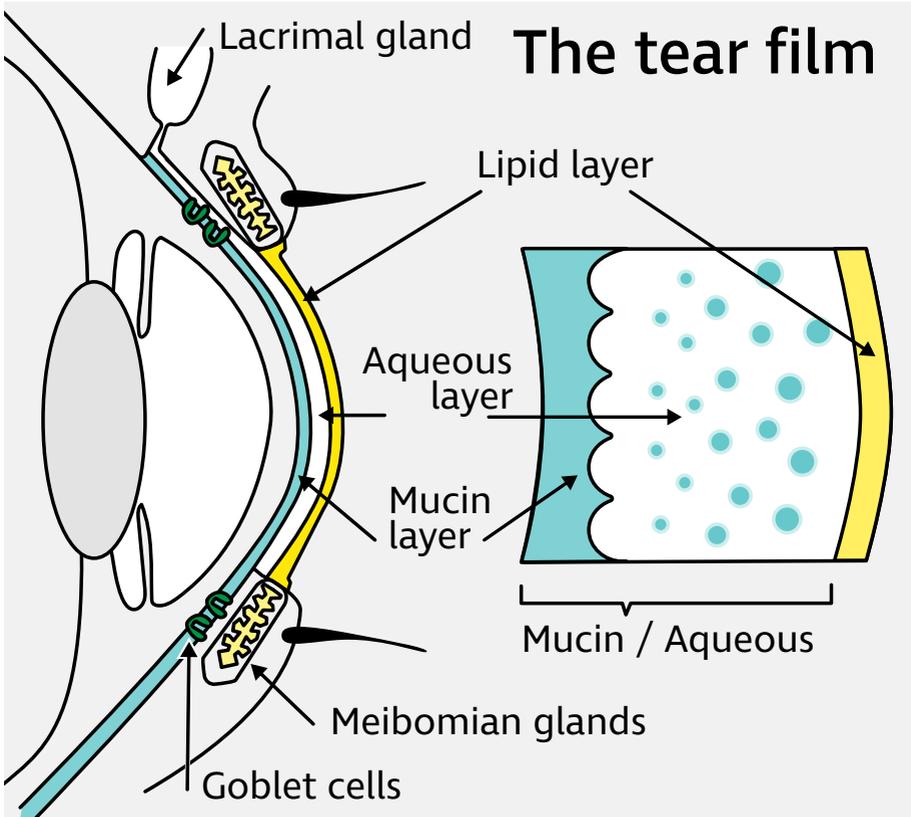
Dry eye is caused by a problem with your tears. You can develop dry eye if you don't produce enough tears, or the tears aren't of the right quality or if they don't spread across the front of your eye properly.

Dry eye is usually more common as people get older. As we age, our eyelids aren't as good at spreading tears each time we blink. The various glands in our eyes that produce tears may also become less effective. It is not always known what causes your eye to become dry but essentially, the quality of something known as your tear film gets worse.

What is the tear film?

When you blink, you spread a thin layer of liquid, called the tear film, over the front surface of your eye. The tear film keeps the front surface of your eye healthy and it also helps the eye focus properly, giving you clear vision.

The tear film is made up of three main layers: the mucin (mucus) layer, the aqueous (watery) layer, and the lipid (oily) layer. Each one of these layers is needed to keep your tear film healthy.



Mucin layer

The inner layer of the tears film, which is closest to the surface of your eye is called the mucin layer. It forms a thin coating on the front surface of the eye. The mucin layer is like a foundation for the other tear layers and helps the watery layer of tears to spread across the surface of the eye and remain in the right shape and place. The layer is produced by goblet cells found scattered across the

conjunctiva – named because their appearance resembles empty goblets after they have discharged mucus onto the surface of the eye.

Aqueous layer

The middle layer of the tears film is called the aqueous layer. This layer of tears provides moisture, oxygen and other nutrients to the front surface of the eye. The aqueous layer helps to wash away anything that gets into the eye such as dirt or an eyelash. It makes sure that the front of your eye is very smooth, which helps your eye to see or focus properly. This layer is produced by lacrimal glands, named after the Latin word for tear, lacrima.

Lipid layer

The outermost layer of the tears film that is furthest from your eye surface is an oily layer of tears called the lipid layer. The lipid layer seals in the moisture of the aqueous layer so that it stays on the front of the eye for as long as it's needed. The lipid layer stops the tears from evaporating too quickly. Evaporation happens as liquids are lost to the air around them. This oily top layer also helps to make sure that the tears are spread over your eye in the right way. The layer is produced by meibomian glands found

running in a row along the length of the eyelids. They are named after the doctor (Heinrich Meibom) who first described them.

In evaporative dry eye, the tears evaporate too quickly, although the production of tears is normal. In aqueous deficient dry eye, there is normal evaporation of tears, but not enough tears are produced.

Anything that affects the structure and balance of your tear film – for example if you produce too little or too much of one of the layers, this will stop the tear film working properly and potentially cause dry eye.

Watery eyes

Some people are diagnosed with dry eye even though their eye appears to be watering all the time. Some people find that their dry eye streams with tears and feels very wet most of the time. This may be because there is a problem with one of the tear layers that irritates your eye and your eye tries to deal with it by producing more watery tears.

These watery tears don't help to correct the dryness in your eye and can cause short periods of blurred vision. People with a watery eye

may be prescribed eye drops to help with the problem in the other layers of tears, as this may stop their eyes from watering too much.

If your eyes water a lot, it can make the skin around the eye sore. This usually clears up on its own, but your GP may be able to give you some cream to soothe it. The area around your eyes is very delicate so you need to take care when using cream or using make-up, as it may cause irritation.

What are the causes of dry eye?

It is sometimes difficult to determine the exact cause of dry eye. Dry eye is multifactorial which means that there can be many factors that contribute to the condition. Sometimes dry eye can be connected to other conditions affecting your body such as diabetes, rheumatoid arthritis as well as others. The condition is common in both men and women with advancing age but women in particular, especially after the menopause. Changes in hormonal levels such as in pregnancy and menopause can contribute to dry eye.

Often the cause of dry eye is not known but the following can also affect your tear film and contribute to dry eye:

Blepharitis and meibomian gland dysfunction

Blepharitis and meibomian gland dysfunction (MGD) are the most common cause of dry eye.

Blepharitis is an inflammation of the eyelid margins and can sometimes be caused by a bacterial infection. It can be divided into two types based on the location:

- Anterior blepharitis is when the inflammation is primarily around the eye lashes and in front of the lid margin.
- Posterior blepharitis is when there is inflammation present behind the eye lashes and is often caused by MGD.

MGD happens when the glands lining your upper and lower lids are blocked. You have about 30 of these small meibomian glands on each upper and lower lid located just behind your lashes. These glands secrete the oily layer onto the front of your tears. If the oil is of poor quality or there isn't enough oil being produced as the glands have become blocked, the tears tend to evaporate quickly leaving your eyes dry and uncomfortable.

If you have blepharitis or MGD, the three principles of using heat, cleaning and hydrating

(with the use of drops) is the mainstay of managing your blepharitis or MGD.

The practising of lid hygiene can really help make your eyes feel more comfortable. You will need to do this twice a day for two to three weeks before you see an improvement. Lid hygiene should continue in the long term to maintain eye comfort.

Lid hygiene for anterior blepharitis

Removing the crusts or debris from your lashes can be helpful if you have anterior blepharitis. Thorough hand washing is required before lid hygiene or applying eye drops. Follow these steps:

- Wash your hands for 20 seconds
- Apply enough soap to cover hands and rub your hands together
- Clean the back of your hands and between the fingers
- Rub your fingers and your thumb
- Rub the tips of your fingers
- Rinse your hands thoroughly
- Dry your hands with a clean towel or paper towels.

- Prepare a cleaning solution of sodium bicarbonate (bicarbonate of soda) in cooled boiled water. To do this, boil the kettle and let the water cool to room temperature. Pour out one cup of water into a clean mug or glass and add a quarter teaspoon of sodium bicarbonate.
- Clean both the upper and lower lids using a clean tissue (folded several times) or a cotton bud. Dip the tissue or cotton bud in the prepared solution and wring out excess water. Wipe along the lid from the nose outwards; use a clean tissue/bud for every wipe. You will need several tissues/buds for each eye. Do not dip a used tissue or bud back into the solution – use a new one each time.
- Wash your hands again for 20 seconds as above.

Your optometrist or pharmacist may recommend pre-prepared lid wipes or cleaning solutions that you can purchase as an alternative to this that you may find more convenient to use.

Lid hygiene for posterior blepharitis or MGD

A warm compress is often recommended for posterior blepharitis or MGD. The heat of the compress can help to unblock the meibomian glands. Along with gentle massage and lid cleansing, the compress will help to release any oil that may be trapped in your glands. Here are the steps to follow:

- Wash your hands for 20 seconds using the above steps.
- Apply a warm compress over your eyes for five to 10 minutes – use a clean flannel rinsed in hot water, reheating regularly to keep it warm.
- Use your finger or cotton bud to massage the skin towards your lashes. For your top lashes, you would be applying pressure downwards to the lashes and for the bottom lashes, you would move in an upwards direction.
- Follow the lid hygiene process for anterior blepharitis.
- Wash your hands for 20 seconds as above.

As an alternative, you can also buy commercially made lid warming devices that can be heated in the microwave. These tend to stay at the correct temperature for a longer time so may be more effective.



More information on blepharitis and MGD can be found on the Patient Info website at <https://patient.info/eye-care/swollen-eyelid/blepharitis>

Medication

If you're taking certain drugs, such as antihistamines, antidepressants, pain medications and oral contraceptives, you may develop dry eye symptoms. Eye drops which contain preservatives may also contribute to dry eye, especially if you are using them frequently.

Contact lenses

Using contact lenses can cause you to develop dry eye. The length of time you wear your contact lenses along with other factors such as using computer screens, air pollution and wearing make-up can make the symptoms of dry eye worse. If wearing your contact lenses is making your dry eye symptoms worse, speak to your optometrist who will be able to give you advice about how to improve your symptoms or trying a different type of contact lens or cleaning solution. You may be asked not to wear your contact lenses for a period to give your eyes a rest. You should follow the advice for wearing contact lenses issued by your

optometrist in terms of replacement frequency, wearing time and cleaning regime.

Other health conditions

There are a number of health conditions, particularly inflammatory conditions, that are associated with dry eye, such as rheumatoid arthritis and Sjögren's syndrome. Sjögren's syndrome is a condition that may cause you to have dry eye and a dry mouth.

For more information on Sjögren's syndrome, contact The British Sjögren's Syndrome Association (their details can be found at the end of this publication).

Surgery to the eye or injury to the eye surface

If you have surgery on your eye (for example laser eye surgery) or an accident which affects or scars your eye, you may develop dry eye. Your dry eye symptoms usually improve once the eye has healed, but this can take time.

Environment

There are environmental factors that may cause or make your dry eye symptoms worse. These include dusty or smoky environments as well as heavily polluted areas or wearing make-up. Using air conditioners in the car and office as well as heaters may make your dry eye symptoms worse. Trying to identify and address these environmental factors are often recommended as a first step in helping to reduce your dry eye symptoms. Using air purifiers and humidifiers might help.



How is dry eye diagnosed?

If your eyes feel uncomfortable and irritated, or you feel like there is something in your eye all the time, then you should tell your GP, optometrist or ophthalmologist.

Your GP or eye health professional may ask you about potential reasons for having dry eye, such as tablets and medication you are taking, your general health and any environmental factors which might be relevant (for example, whether you work in dusty places).

As well as examining the front of your eyes and the quality of your tears with a microscope called a slit lamp, your eye health professional may want to do further tests as well to work out if you have dry eye and if you do, how dry your eyes are. This can help them decide how to treat your eyes. The tests can check how much tears you produce and detect any areas on the front of your eye that don't have enough tears.

What is the treatment for dry eye?

There's no cure for dry eye but there are treatments that can help your eyes feel more comfortable and keep your symptoms at bay.

If your dry eye is caused by medication, then your GP may consider switching your medication to another. If your dry eye is caused by wearing contact lenses, then having a break from your lenses or asking your optometrist about trying a different type of contact lens may help the dry eye to improve.

Often dry eye is caused by getting older, which can't be helped, but there is treatment that can help with your symptoms. There are three main ways to help your dry eye:

- making the most of your natural tears
- using artificial tears (eye drops)
- reducing the draining away of the tears.

Making the most of your natural tears

There are things that you can do yourself which may help reduce the symptoms of dry eye. High temperatures and central heating can make tears evaporate more quickly, so sometimes lowering temperatures can help. Another option would be to use a humidifier (a small machine that helps to put water into the air), which may help slow down the evaporation of your tears and keep your eyes comfortable.

Many people find that their dry eye is worse when they're reading or using a computer. This is because you blink less when you are doing a task like this, giving the tears more chance to evaporate. You can try to blink more when you're doing these tasks, or use eye drops before you read, watch TV or use a computer, as this may help to keep your eyes comfortable.

Many people, particularly those with meibomian gland dysfunction (MGD), find that using warm compresses can help (see section on "What are the causes of dry eye?"). In turn this will improve the quality of your tears, making your eyes feel more comfortable.

There is some debate on whether diet helps

with reducing the symptoms. Omega 3 and 6 as well as flaxseed oil are thought to help with dry eye. However, there isn't any largescale evidence that taking these nutrients in the form of supplements will help you.

Using eye drops

Most people with dry eye need to use some form of eye drops, also known as artificial tears. Eye drops aim to supplement and replace your natural tears and help keep the surface of the eyes lubricated. This can make the eyes feel more comfortable. They can also prevent any damage to the front of your eye, which can happen if the eye is dry for a long time.

You should use your eye drops as advised. If you are having to use your drops more than four times a day, then you should let your ophthalmologist or optometrist know, as you may need a different type of drop or additional treatment to the drops you're using.

There are three main types of eye drops which your GP or eye health professional may recommend or prescribe:

Artificial tears

Artificial tears are made by many different companies. Some people find one brand works better for them than another, though the reasons for this aren't clear. Different drops have different lubricating agents which may suit someone's dry eye better. Your eye health professional may suggest a selection of different brands for you to try. It is usually best to try one type for at least a month.

Most artificial tear drops can be bought over the counter from the pharmacist. Some people develop sensitivity to the preservative used in the drops, especially if they're using them a lot. This can make your eyes sore. You can ask for preservative-free eye drops if this is the case.

Gels

Some people may prefer to use thicker gel-like drops. The gels are made from different lubricating agents and may stay in the eye for longer. They do the same thing as ordinary drops, but you don't have to put them in as often.

Ointments

You may be prescribed or recommended an ointment which you can apply before going to

bed to keep your eyes moist overnight. When you sleep, sometimes your eyes aren't fully closed, so tears can evaporate leaving your eyes very dry when you wake up. Ointments help stop the eyes drying out overnight so that they feel more comfortable in the morning. Ointments are usually used before bedtime because they are sticky and cause blurry vision, while eye drops are used during the day.

Specialist drops

In severe cases, dry eye can cause swelling or inflammation. You may be prescribed drops or ointments to help with this such as antibiotics, corticosteroids and ciclosporin. This would normally only be prescribed by an ophthalmologist. Other specialist drops, known as serum eye drops, may also be prescribed for the very few cases that require them, although this is quite rare and only considered based on someone's individual circumstances.



Reducing the draining away of tears

It's possible to help dry eye by blocking up the drainage holes called puncta, in your eyelids. Stopping the tears from draining away may help your tears stay in your eye for longer. The medical term for blocking the tear ducts is "punctal occlusion".

Usually, punctal occlusion is tried for a period of time to see if it helps. The small drainage channels are blocked by small devices called punctal plugs. If it helps you with the symptoms of dry eye, then the plugs are left in place. Occasionally, a permanent small surgical procedure can also be performed, if temporary blocking has been useful.

Often plugs or blocking the ducts is helpful at reducing the number of drops you need to use in the eyes every day. If you've had your tear ducts blocked you may still need to use drops, gels or ointments to protect your eyes and keep them as comfortable as possible.

Newer treatments

There are newer treatments primarily being offered in private clinics for dry eye. Some of these include moisture chamber spectacles / goggles which can help your eyes retain moisture. There are special over the counter sprays that help reduce evaporation and soothe the eyes. Another is the Lipiflow system which is a device that fits over your eye and directs heat and gentle massage to the eyelids specifically to help with blepharitis and MGD. Another possible treatment option includes Intense Pulse Light (IPL) which requires several sessions of treatment in the form of pulses of light applied to the glands around your eyes to help unblock and clear the meibomian glands. These treatments are usually available from private optometrists who specialise in dry eye and are currently not available on the NHS.

For some people with dry eye, multiple treatments may be required to manage their dry eye condition and your eye health professional would have to tailor treatment based on your individual circumstances. There are new treatments being explored all the time to help with dry eye symptoms.

Is there anything I can do to help with dry eye?

Having dry eyes can be difficult. Eyes that are red, uncomfortable and painful for long periods can be tiring. When your eyes first become dry, you may feel upset and worried. However, dry eye doesn't usually cause any damage to your eye and typically doesn't lead to permanent changes to your vision. There are many things that you can try to help you manage it better:

- Use your prescribed eye drops regularly. Finding eye drops that work for you can make a huge difference.
- Adjust your environment. Lowering temperature and using a humidifier may help, as central heating and air conditioning can worsen your symptoms.
- Avoid dusty, windy and smoky areas or use wrap-around glasses when you are exposed to these environments.
- Take rest periods and remember to blink often when you are using the computer, watching television or reading.

- Try to have a healthy balanced diet, with flax seed as well as foods containing omega 3 and 6, such as oily fish, nuts, seeds, eggs, green leafy vegetables, etc.
- Avoid using eye make-up when there's infection, inflammation present or when the eyes are sore.
- If you wear contact lenses, have regular eye follow-ups. You may need a break from wearing contact lenses if your eyes are dry or explore different types of lenses which may be more suitable for dry eye.

Finding the right eye drops to suit you and trying different things to help cope with the symptoms of dry eye can take some time and commitment. Although there is no cure for dry eye, most people will learn how to manage their dry eye so that it doesn't have too much impact on their everyday lives.

Further help and support

If you have questions about anything you've read in this publication, or just want someone to speak to about your eye condition, please get in touch with us.

Our Helpline is your direct line to the support, advice and services you need. Whether you want to know more about your eye condition, buy a product from our shop, join our library, find out about possible benefit entitlements, or be put in touch with a trained counsellor, we're only a call away.

Give us a call today to find out how we can help you.

RNIB Helpline

0303 123 9999 helpline@rnib.org.uk

We're ready to answer your call Monday to Friday 8am to 8pm and Saturday 9.30am to 1pm.

You can also get in touch by post or by visiting our website:

RNIB
105 Judd Street
London WC1H 9NE
rnib.org.uk

Other useful contacts

British Sjögren's Syndrome Association

PO Box 15040

Birmingham

B31 3DP

Helpline:

0121 478 1133

bssa.uk.net

Lid Hygiene for MGD and Blepharitis

Step 1: Wash your hands thoroughly

Before you touch your eyes, it is important you wash your hands thoroughly for 20 seconds.

- Apply enough soap to cover hands and rub your hands together.
- Clean the back of your hands and between the fingers.
- Rub your fingers and your thumb and rub the tips of your fingers.
- Rinse your hands thoroughly.
- Dry your hands with clean towel or paper towels.

Step 2: Apply Heat and Gentle Massage

- Apply a warm compress over your eyes for five to 10 minutes – use a clean flannel rinsed in hot water, reheating regularly to keep it warm.
- As an alternative, you can also buy commercially made lid warming devices eye that can be heated in the microwave which retain the heat more effectively.

- Use your finger or cotton bud to massage the skin towards your lashes. For your top lashes, you would be applying pressure downwards to the lashes and for the bottom lashes, you would move in an upwards direction.

Step 3: Clean

- You can either use freshly boiled and cooled water or prepare a cleaning solution of sodium bicarbonate in cooled boiled water. To do this, boil the kettle and let the water cool to room temperature. Pour out one cup of water into a clean mug or glass and use this for the next step or you can add a quarter teaspoon of sodium bicarbonate to the water.
- Your optometrist or pharmacist may recommend wipes or cleaning solutions that you can purchase as an alternative to this.
- Clean both the upper and lower lids using a clean tissue (folded several times) or a cotton bud. Dip the tissue or cotton bud in the prepared solution and wring out excess water. Wipe along the lid from the nose outwards; use a clean tissue/bud for every wipe. You will need several tissues/buds for each eye. Do not dip a used tissue or bud back into the solution – use a new one each time.

Step 4: Moisture

- Apply your lubricating eye drops and ointments

Step 5: Wash your hands thoroughly again

- Wash your hands again following step 1



RNIB Booklet Series

About the Starting Out series

The Starting Out series aims to give people who are losing or have recently lost their sight essential information about living with sight loss. Titles include:

- Benefits, Concessions and Registration
- Emotional Support
- Employment
- Help from Social Services
- Making the Most of Your Sight

About the Confident Living Series

The Confident Living series is for people who are losing or have recently lost their sight and are trying to build their confidence to continue to lead full and independent lives. Titles include:

- Leisure
- Reading
- Shopping
- Technology
- Travel

About the Understanding Series

The Understanding series is designed to help you, your friends and family understand a little bit more about your eye condition. Titles include:

- Age Related Macular Degeneration
- Cataracts
- Charles Bonnet Syndrome
- Dry Eye
- Eye Conditions Related to Diabetes
- Glaucoma
- Nystagmus
- Retinal Detachment
- Retinal Pigmentosa
- Posterior Vitreous Detachment

All these leaflets are available in audio, print and braille formats. To order please contact our Helpline on **0303 123 9999** (all calls charged at local rate), email helpline@rnib.org.uk or visit **shop.rnib.org.uk**

For a full list of the information sources used in any of these titles please contact **ckit@rnib.org.uk**

We value your feedback

You can help us improve our information by letting us know what you think. Is this booklet useful, easy to read and understand? Is it detailed enough or is there anything missing? How could we improve it?

Send your comments to us by emailing us at eyehealth@rnib.org.uk or by writing to the Eye Health Information Service, **RNIB, 105 Judd Street, London, WC1H 9NE.**

Information sources

RNIB and The Royal College of Ophthalmologists do all we can to ensure that the information we supply is accurate, up to date and in line with the latest research and expertise.

This publication uses information from:

- The Royal College of Ophthalmologists' guidelines for treatment
- clinical research and studies obtained through literature reviews
- specific support groups for individual conditions
- medical textbooks
- RNIB publications and research.

For a full list of references and information sources used in the compilation of this publication, email **eyehealth@rnib.org.uk**.

About The Royal College of Ophthalmologists

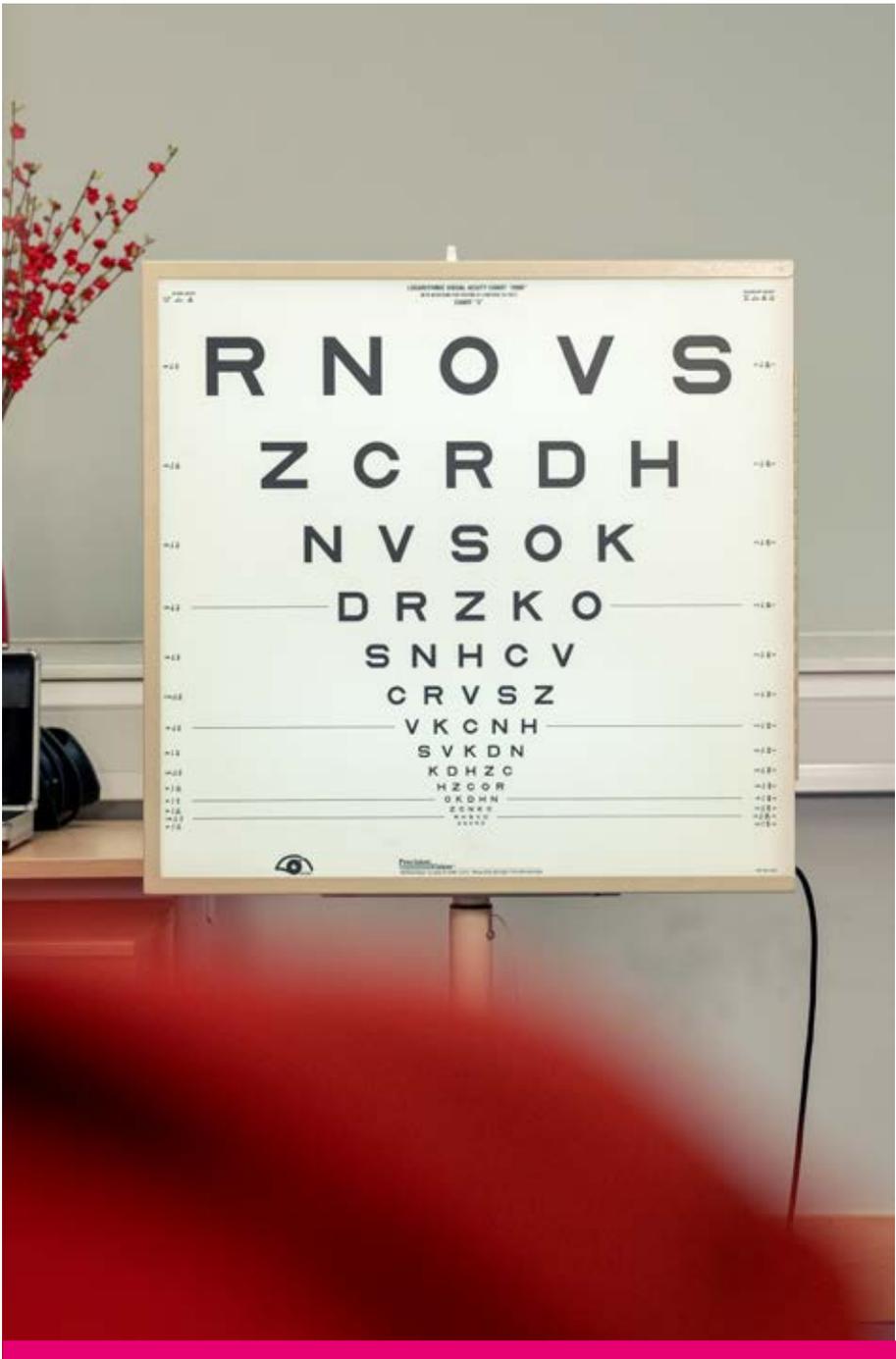
The Royal College of Ophthalmologists champions excellence in the practice of ophthalmology and is the only professional membership body for medically qualified ophthalmologists.

The College is unable to offer direct advice to patients. If you're concerned about the health of your eyes, you should seek medical advice from your GP or ophthalmologist.

rcophth.ac.uk

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Meet or connect with others who are blind or partially sighted online, by phone or in your community to share interests, experiences and support for each other. From book clubs and social groups to sport and volunteering, our friendly, helpful and knowledgeable team can link you up with opportunities to suit you. Visit **rnib.org.uk/connect** or call **0303 123 9999**.



RNIB

If you or someone you know is living with sight loss, we're here to help.

RNIB Helpline

0303 123 9999

helpline@rnib.org.uk

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