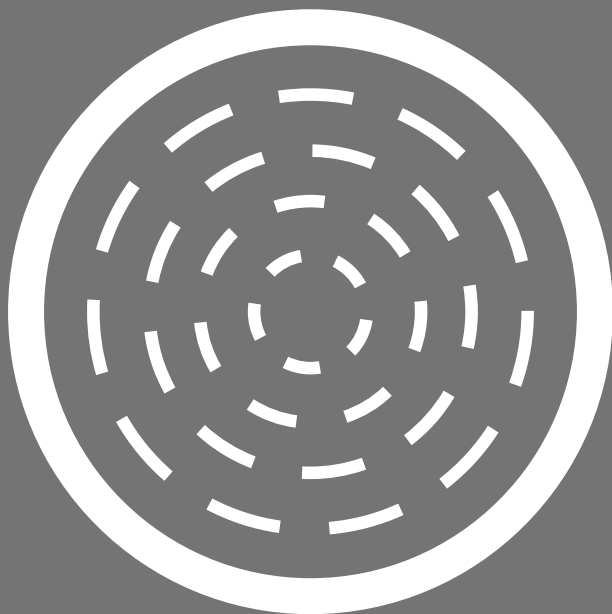


Understanding

Dry eye



Supporting people
with sight loss



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 an eye condition caused by a problem with tears. 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. Sometimes 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.

Although dry eye doesn't usually cause long-term problems with your sight, it's important to let someone know if your eyes are feeling uncomfortable, gritty and sore. Your GP may be able to help by recommending eye drops which act as replacement tears. Your GP may also recommend that you have your eyes examined by other health professionals such as:

- another GP with a special interest in eyes
- an optometrist (also known as an optician)
- an ophthalmologist (also known as an eye doctor).

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 be always 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. Medically, dry eye is known as keratoconjunctivitis sicca.

Why have I developed dry eye?

Dry eye is caused by a problem with your tears. You may develop dry eye if:

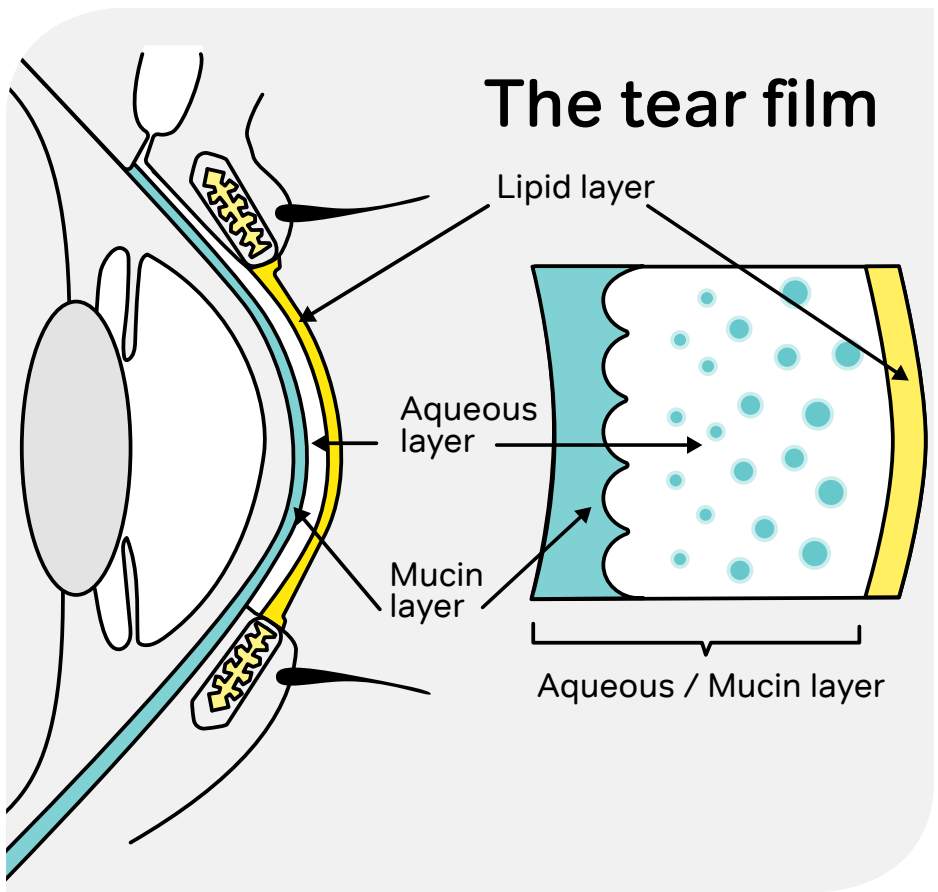
- you don't produce enough tears
- your tears aren't of the right quality
- your tears aren't spread across the front of your eye properly.

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. Essentially, the quality of something known as your tear film gets worse.

What is the tear film?

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

The tear film is made up of three layers: the mucin (mucous) 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 layer of tears closest to your eye is called the mucin layer. It forms a layer on the cornea, the clear part of the front of the eye. The mucin layer is like a foundation for the other tear layers and helps the watery layer of tears remain in the right shape and in the right place.

Aqueous layer

The middle layer of tears is called the aqueous layer. This layer of tears provides moisture, oxygen and other nutrients to the cornea, the clear front of your eye. The aqueous layer helps to wash away anything that gets into the eye such as dirt. 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 small glands underneath the upper eyelid called lacrimal glands, named after the Latin word for tear, lacrima.

Lipid layer

The top layer of tears furthest from your eye 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.

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

What are the causes of dry eye?

While dry eye can occur at any age, it is more common in women, especially after the menopause. Changes in hormonal levels such as in pregnancy and menopause can contribute to dry eye. 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 both very common causes of dry eye.

Blepharitis is an inflammation of the eyelids 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 lashes and in front of the lid margin.
- Posterior blepharitis is when there is inflammation present behind the lid margin 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 oil onto the front of your tears. If too much or too little is produced, the tears tend to evaporate too fast leaving your eyes dry and uncomfortable.

If you have blepharitis or MGD, practising 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 for anterior blepharitis

Removing the crusts or debris from your lashes can be helpful if you have anterior blepharitis. Follow these steps (remember to always wash your hands before you start and after you finish):

- 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 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.

Your optometrist or pharmacist may recommend wipes or cleaning solutions that you can purchase as an alternative to this.

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 washing, the compress will help to release any oil that may be trapped in your glands. Here are the steps to follow:

- 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.

As an alternative, you can also buy commercially-made eye bags that can be heated in the microwave.

More information on blepharitis and MGD can be found on the NHS Choices website at **www.nhs.uk/conditions/Blepharitis** or call NHS **111**.

Medication

If you're taking certain drugs, such as antihistamines, antidepressants, pain medications and oral contraceptives, you may develop dry eye symptoms.

Contact lenses

Using contact lenses can put you at risk of developing dry eye. You should follow the advice for wearing contact lenses and look after them carefully.

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.

More about tears

The tears in your eye are drained through the tear ducts. Tear ducts are drainage holes that connect the eyelids to the inside of your nose. This is why your nose may run or feel stuffy when you cry.

Reflex tearing

As well as the normal production of tears, you can produce a lot of tears in one go through reflex tearing. A reflex is your body's automatic response to certain situations and is something you have no control over. Emotion, peeling onions or an injury, such as poking your eye, will cause the body to produce lots of extra aqueous tears. These tears are designed to wash away anything that may be in your eye. No one is really sure why emotion causes extra tears. These extra watery tears drain away quickly and do little to soothe a dry eye. This overwatering of the eye won't damage your eye, though it may make your sight blurry while it's happening.

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 a different tear layer 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, as it may cause irritation.

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 care 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 maybe relevant (for example, whether you work in dusty places).

There are a number of tests which your eye care professional may want to do to work out if you have dry eye and if you do, how dry your eyes are. These tests help them decide how to treat your eyes. The tests also check how many tears you produce and detect any areas on the front of your eye that don't have enough tears.

As well as examining the front of your eyes and the quality of the tears with a special microscope called a slit lamp, there are other tests your optometrist or ophthalmologist may want to do: the tear film break-up time test and the Schirmer test.

Tear film break-up time

This test finds out how long after blinking your eye starts to dry out. The ophthalmologist or optometrist uses eye drops containing a special dye which makes your tears easy to see. They put the drops into your eye and ask you to blink a number of times to make sure that the dye is in your tears properly. They will then ask you to stop, and keep your eyes open without blinking.

The optometrist or ophthalmologist uses a coloured light to see the dye and times the period between your last blink and the formation of dry patches. The dry patches are shown up by the dye. If your eyes start to show patches of dryness before 10 seconds, it usually means that there is some evidence of dry eye. The dye does not change the colour of your eye and only stays in your eye for a short while; however, it can temporarily stain your skin if tears run down but can easily be washed away.

Schirmer test

This is a test with filter paper which may be performed to test tears. It involves using a special filter paper, which is placed into the area between your lower eyelid and the eye and then left in the eye for about five minutes. After this the ophthalmologist is able to see how many tears the eye produces in that period.

This test isn't performed very often as it doesn't usually change the way someone with dry eye is treated, but it might be needed if your dry eye is very severe. Sometimes a similar test using a specially-prepared thread can also be used.

What is the treatment for dry eye?

Once the ophthalmologist, optometrist or GP has confirmed you have dry eye, they will discuss what can be done to help you. You cannot cure dry eye but there are some treatments that can help your eyes feel more comfortable.

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 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 puts 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 or not diet helps with reducing the symptoms. In particular, omega 3 and 6 as well as flaxseed oil are thought to help with dry eye. However, there isn't any large scale 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 make the eye 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 prescribed. 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 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. Your doctor 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. If you're entitled to free prescriptions, or have a pre-payment certificate, you can ask your doctor to prescribe them. 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 chemicals 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

Your GP or ophthalmologist may prescribe or recommend 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.

Reducing the draining away of tears

It's possible to help dry eye by blocking up the drainage holes 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.



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

Having dry eyes can be difficult. Eyes that are red, itchy 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 and 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 or inflammation present.
- 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.

It's also a way for you to join RNIB Connect, our community for anyone affected by sight loss. RNIB Connect is free to join and you'll have the chance to meet other people with similar experiences in our helpful, welcoming and supportive community.

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 9am to 1pm.

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2. Did you find the information easy to read and understand? Please give details of anything you feel could be improved.

continued next page

3. Is there any information you would have found helpful, that was missing?



4. Do you have any other comments about this publication or any aspect of your contact with RNIB?

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 text books
- 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.

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

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0303 123 9999
helpline@rnib.org.uk

Ask RNIB is the simple and easy way to find the answers to your questions online – try it today at **rnib.org.uk/ask**

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