

Understanding dry eye



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About dry eye

Dry eye is an eye condition caused by a problem with tears. Dry eye can make your eye feel dry, scratchy, irritated and uncomfortable. It often affects both eyes but sometimes one eye is affected more than the other. It can make you feel you have something in your eye, like an eyelash or a piece of grit, even when there is nothing there. Dry eye can make your vision slightly blurry, though usually only for short periods of time. The blurriness usually gets better on its own or when you blink.

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 optometrist (optician) 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.

Causes

Dry eye is caused by a problem with your tears. 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 a complicated structure made up of three layers. If you don't produce enough tears, if your tears aren't of the right quality or your tears aren't spread across the front of your eye properly then you may develop dry eye.

Dry eye is usually a natural symptom of getting older. As you get older your eyelids are less effective at spreading the tears each time you blink. The various glands in your eye that produce the three layers of the tear film become less effective, so the quality of your tear film is affected as you get older.

Your tear film may also be affected by:

- some drugs, like antihistamines or oral contraceptives
- contact lenses, which can make you more at risk; you should follow the advice for wearing and looking after them very carefully
- other health problems, such as rheumatoid arthritis

- Sjögren's syndrome, which may cause you to have dry eye and a dry mouth or vagina
- surgery or an accident which affects or scars your eye, although this usually improves once the eye has healed
- an infection or inflammation of any of the glands around your 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.

The tear film

Every time you blink you create the tear film across the front of your eye. Dry eye happens if these tears aren't spread properly or if the tear film is of poor quality. If there are tiny patches of dryness in the tear film then your eye feels uncomfortable and each time you blink the patch will be irritated.

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.

The middle layer of tears is called the aqueous or watery layer. This watery layer of tears provides moisture to the eye and oxygen and other nutrients to the cornea, the clear front of the eye. These watery tears also help wash away anything that gets into the eye such as dirt. They make sure that the front of the eye is very smooth, which helps your eye to focus properly. This layer is produced by small glands underneath the upper eye lid called lacrimal glands. These lacrimal glands are named after the Latin word for tear, lacrima.

The top layer of tears furthest from the 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 needs to. The lipid layer stops the watery 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 the eye in the right way.

All these layers of tears are produced by small glands around the eye and eye lids. Each time you blink the three layers of tears should be spread right across the front of your eye. Anything that affects the composition of the 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.

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

Reflex tearing

As well as the normal production of the tears you can produce a lot of tears in one go through reflex tearing. A reflex is the 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 over-watering 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. In fact 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 this by producing more watery tears.

These watery tears don't help to correct the dryness in your eye. Watery eyes 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 prevent 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 like this as the cream itself may irritate your eye.

Diagnosis

If you find that your eyes feel dry, 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 (eye specialist).

Your GP or eye specialist may already be aware of a potential reason for you having dry eye, such as a medical condition or medication you are using or because you're getting older. In either case you need to tell them about medication you are taking, your general health and any environmental factors which maybe relevant, such as working in dusty places.

There are a number of tests which your optometrist or ophthalmologist 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 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 three other tests your optometrist or ophthalmologist may want to do:

1. 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 ten seconds it usually means that there is some evidence of a dry eye. The dye does not change the colour of your eye and only stays in your eye for a short while.

2. Rose Bengal staining

This test uses a different dye, which makes damaged tissue on the front of your eye easier to see. Sometimes the front of your eye can be slightly damaged in the dry patches.

Usually only an ophthalmologist would do this test but it is not used very often as it can be uncomfortable and irritate an already dry eye.

3. Schirmer test

This is a test with filter paper which may be performed to test tears. It is not performed as often as it used to be. It involves using a special filter paper which is placed into the area between your lower eyelid and the eye. This piece of paper is 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.

Treatment

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 another condition, such as an infection, then treating this infection may help with your dry eye symptoms. 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:

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

1. Making the most of your natural tears

There are things that you can do yourself which may help reduce the symptoms of dry eye. You can often lower the temperature in a room because high temperatures and central heating can make tears evaporate more quickly. However, you need to make sure that you keep yourself comfortable. A humidifier is a small machine that helps

put more water into the air, which may help slow down the evaporation of your tears.

Many people find that their dry eye is more uncomfortable when they're reading or using a computer. This is usually because you tend to blink less when you are doing this sort of thing, which gives the tears more chance to evaporate. You can try to blink more when you're doing these tasks or use eye drops before you do anything, like reading, as this may help to keep your eyes comfortable.

2. 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.

Eye drops don't contain any drugs, they are just replacement tears. This means that they can be used frequently, or as much as you need them. However if you are having to use your drops more than 4 or 6 times a day then you should let your ophthalmologist or

optometrist know as you may need a different treatment to the drops you're using.

There are three main types of eye drops which the GP, optometrist or ophthalmologist may prescribe or recommend:

Artificial tears

Artificial tears are made by many different companies. Some people find one brand works better for them than another, although no one knows why. 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 prepayment 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. Preservative-free drops are available.

Gels

If your standard eye drops aren't helping, your doctor may suggest thicker gel-like drops which are made from different chemicals and may last longer in the eye. They

do the same thing as the ordinary drops but you don't have to put them in as often.

Ointments

Ointments are also available to help keep your eye moist overnight. When you sleep, sometimes your eyes aren't fully closed, so tears can evaporate and leave 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 tend to be used overnight because they are sticky and cause blurry vision. Ointments are usually used as well as eye drops during the day.

3. Reducing the draining away of tears

It is possible to help dry eye by blocking up the two drainage holes in your lower eyelids. Stopping the tears from draining away may help your tears to 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 little pieces of plastic called punctal plugs. If it helps you with the symptoms of dry eye, the plugs are left in

place. Sometimes blocking the ducts can cause the eye to over-water or you may experience infections. If this happens, then the plugs can be removed. If you have 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.

There is some debate on whether or not diet helps with reducing the symptoms. In particular, certain oils, omega 3 and 6 are thought to help with dry eye. However, there isn't any large scale evidence that taking these supplements will help you.

Coping

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 it doesn't lead to permanent changes to your vision.

Although there is no "cure" for dry eye, the drops prescribed can often make your eyes much more comfortable. Adjusting to dry eye and to taking the drops regularly can be a challenge, but finding out how regularly you need to take your drops and finding a drop that suits you can make a huge difference. This may take some time but usually everyone finds a system that works for them. Most people can learn to manage their dry eye so that it doesn't have too much impact on their everyday lives.

Useful contacts

RNIB isn't aware of a particular support group for people with dry eye. However, there is a national charity for people with Sjögren's syndrome as this syndrome causes very dry eye.

Royal National Institute of Blind People

105 Judd Street, London WC1H 9NE

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Royal College of Ophthalmologists

17 Cornwall Terrace, London NW1 4QW

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British Sjögren's Syndrome Association

PO Box 15040

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- clinical research and studies obtained through literature reviews
- information published by specific support groups for individual conditions
- information from text books
- information from RNIB publications and research.

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

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