

Dry eye



Patient information leaflet

What is dry eye?

Dry eye is a common condition affecting about 1 in 10 people.

Dry eye occurs when your eyes do not make enough tears or when your tears evaporate too quickly.

Dry eye can also occur when there is inflammation on your eye surface or within your tears.

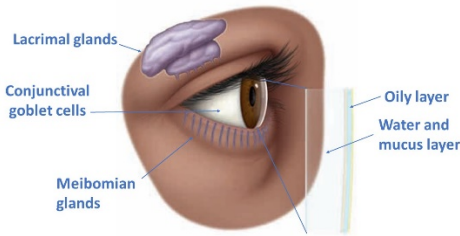
How do tears work?

Normally, when you blink, your eyelids spread a thin and smooth tear film across your eye – like a Zamboni on an ice-hockey rink.

What is the tear film?

The tear film is made of two layers:

1. An outer oily layer (closest to the air) made by **meibomian glands**.
2. An inner layer made of **water and mucus** (closest to the eye). Water is made by the **lacrimal glands** and mucus is made by **conjunctival goblet cells**.



Adapted from https://store.aao.org/media/resources/051180/Dry-Eye_05-19.pdf

The tear film has three roles:

1. To keep the eye moist, clean, and comfortable.
2. To nourish the cells and nerves on the eye surface.
3. To help direct light to the back of the eye and ensure clear vision.

What causes dry eye?

Causes of dry eye vary between people.

Problems may arise from one or more of the following areas:

1. Lacrimal glands that do not secrete enough water.
2. Meibomian glands that secrete poor quality oil or abnormal amounts of oil.
3. Eyelids that do not blink often enough or do not blink fully.

4. General health problems that cause inflammation or damage to the lacrimal gland such as autoimmune (rheumatoid) diseases and chemotherapy.

What are some of the underlying causes of dry eye?

Dry eye usually involves some amount of inflammation which is the eye's defense response to the underlying cause.

It is difficult to list all the underlying causes of dry eye, but some include:

1. Older age, especially for women due to hormone changes.
2. Meibomian gland dysfunction which damages the oily layer of the tear film and causes tears to evaporate.
3. General health problems like autoimmune (rheumatoid) diseases which cause inflammation and damage to the lacrimal gland.

4. Dry air – **a big problem in Colorado.**

5. Air pollution, air conditioning, wind and drafts, cigarette smoke, and allergies.

6. Spending too much time looking at computer screens or reading which reduces the number of times you blink.

7. Eyelid problems like blepharitis (red or swollen eyelids), entropion (eyelids turned in), or ectropion (eyelids turned out).

8. Wearing contact lenses.

9. Vision correcting laser eye surgery and cataract surgery.

10. Wearing facemasks incorrectly during the COVID-19 era.

11. Poor sleeping patterns or shift work.

12. Medications including:

- Allergy medications (antihistamines).

- Anxiety medications and antidepressants.

- Diuretics for high blood pressure (due to water loss).

- Glaucoma eye drops or other eye drops with preservatives.

- Chemotherapy.

What are the symptoms of dry eye?

Dry eye can cause:

1. A stinging or burning feeling in your eyes.

2. A gritty feeling like something is in your eye.

3. Excess tearing even if your eyes do not feel dry.

4. Blurred, distorted, or fluctuating vision.

5. Red or irritated eyes.

6. Light sensitivity.

7. Tired eyes.

8. Eye pain.

How is dry eye diagnosed?

Your eye care provider will use special dyes and instruments to do some painless tests and will ask questions to assess:

1. Symptoms
2. Tears
3. Eyelids and blinking
4. Eye surface
5. Meibomian gland assessment

What are the treatments?

Treatments aim to improve the symptoms and fix the underlying cause of your dry eye.

Treatments for dry eye work by the 6-Rs:

1. **Remove** environmental causes.
2. **Replenish** your tears.
3. **Retain** your tears.
4. **Retard** evaporation.
5. **Reduce** inflammation.
6. **Re-innervate** (regrow nerves on the eye surface).

Your eye care provider may offer more than one treatment at the same time.

Some of the options to **discuss with your eyecare provider** are outlined below:

Lifestyle changes

Lifestyle changes aim to **remove environmental causes** of dry eye.

Some lifestyle changes include:

1. Using air humidifiers at home or work.
2. Avoiding airflow over your eyes by:
 - Preventing indoor drafts and pointing air vents and fans away from your face.
 - Correctly sealing COVID-19 facemasks at the nose bridge and cheeks.
 - Wearing a sleep mask at night.
3. Drinking plenty of water.
4. Avoiding cigarette smoke.
5. Wearing wind blocking eyeglass frames.

6. Taking breaks when using computers or reading:

- Every 20 minutes, take a 20 second break and stare 20 meters into the distance.
- Also, perform blinking exercises during breaks.
- Hold reading material below eye level.

Making at least one of these lifestyle changes may improve your dry eye symptoms.

Lubricant tears

Lubricant tears **replenish your tears** and can be bought over the counter without prescription.

There are many brands with different ingredients.

Try a few until you find one that suits you best.

Use lubricant tears at regular intervals and as often as you like.

Choose preservative-free brands if you use them more than 4 times per day.

Avoid eye drops that claim to relieve redness.

Use thick gels or ointments before going to bed.

Diet changes

Omega-3 fats help **reduce inflammation**. Omega-3 fats can be eaten in oily fish like salmon, mackerel, or tuna. Omega-3 can also be taken as supplement tablets or capsules without prescription.

Punctal plugs

Punctal plugs work to **retain your tears**. They are tiny plugs that are placed in your tear duct close to your nose. They act like a stopper in a bathtub to hold more tears on your eyes longer.

Your eye care provider will insert the plugs in the clinic. Some types of punctal plugs will dissolve over time or else they can be removed by your eye care provider in the clinic.

Meibomian gland therapies

Meibomian gland therapies **retard evaporation**. These treatments improve the

quantity and quality of oils made by the meibomian glands. Some include:

1. Heated eye masks
2. Intense pulsed light (IPL)
3. Lipiflow®

Heated masks can be used at home. Intense pulsed light and Lipiflow are both procedures performed in the clinic by your eye care provider.

[Anti-inflammatory eye drops](#)

Restasis (cyclosporine A), Xiidra (lifitegrast) or steroid eye drops all help **reduce inflammation**.

These can only be prescribed by your eye care provider and could cause some side effects.

Therefore, your eye care provider should review you at regular intervals when you take these eye drops.

[Autologous serum](#)

Autologous serum drops are tears that are made from your own blood. They have components that resemble natural tears more than lubricant tears.

They work to **replenish your tears** and can **re-innervate** your eye. They also **reduce inflammation**.

Ideally, you should be in good health to draw some of your own blood which will be made into serum eye drops.

However, even those in poor health can almost always use serum drops. Discuss with your eye care provider if you have a general health problem or blood borne illness such as hepatitis.

[Tyrvaya \(varenicline\)](#)

Tyrvaya is the brand name for varenicline which is a nasal spray that can only be prescribed by your eye care provider.

It works to **replenish your tears** by sending nerve signals to the lacrimal gland to make more tears.

Which treatments have you already tried?

Discuss with your eye care provider some of the options described above.

[More information](#)

<https://www.dryeyezone.com>

<https://eyes.cochrane.org/dryeye>

<https://www.aao.org/eye-health/diseases/what-is-dry-eye>

<https://www.aao.org/eye-health/tips-prevention/say-bye-to-dry-eye>

<https://7eye.com>

<https://dryeyeshop.com>

[Acknowledgments](#)

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Thanks to Dr Kaleb Abbott OD MS and Rebecca Petris (Dry Eye Foundation) for assistance in developing the design and content of this patient information leaflet.

Notes