

What is dry eye?

Normally, the eye constantly bathes itself in tears. By producing tears at a slow and steady rate, the eye stays moist and comfortable.

Sometimes people do not produce enough tears or the appropriate quality of tears to keep their eyes healthy and comfortable. This condition is known as dry eye.

The eye uses two different methods to produce tears. It can make tears at a slow, steady rate to maintain normal eye lubrication. It can also produce large quantities of tears in response to eye irritation or emotion. When a foreign body or dryness irritates the eye, or when a person cries, excessive tearing occurs.

What are the symptoms of dry eye?

The usual symptoms include:

- stinging or burning eyes;
- scratchiness;
- stringy mucus in or around the eyes;
- excessive eye irritation from smoke or wind;
- excess tearing;
- discomfort when wearing contact lenses.

Excess tearing from “dry eye” may sound illogical, but it can be understood as the eye’s response to discomfort. If the tears responsible for maintaining lubrication do not keep the eye wet enough, the eye becomes irritated. Eye irritation prompts the gland that makes tears (called the **lacrimal gland**) to release a large

volume of tears, overwhelming the tear drainage system. These excess tears then overflow from your eye.

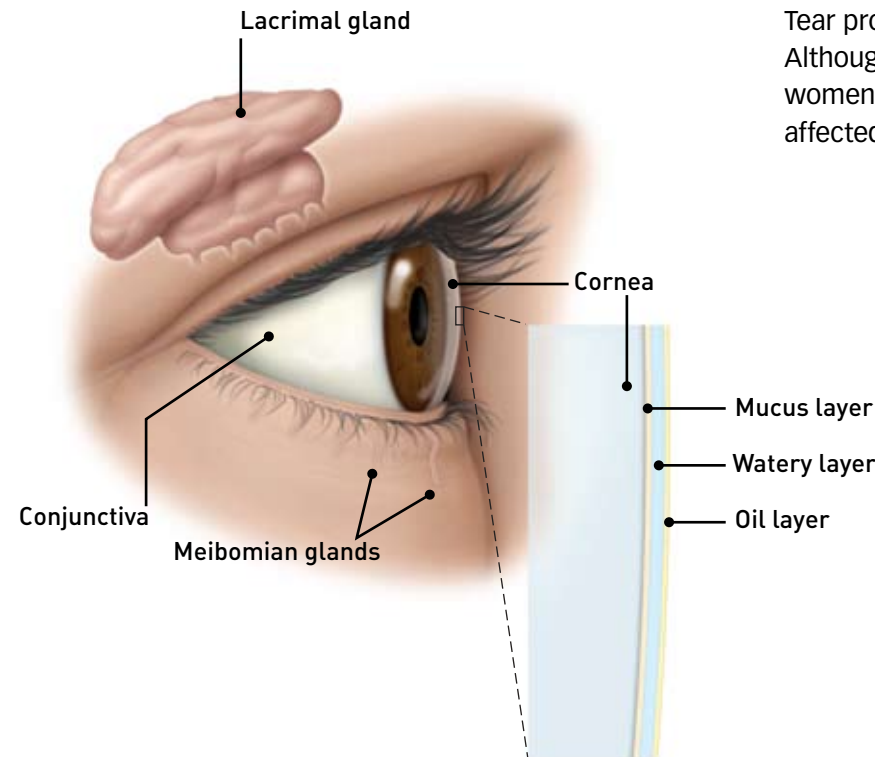
What is the tear film?

When you blink, a film of tears spreads over the eye, making the surface of the eye smooth and clear. Without this tear film, good vision would not be possible.

The tear film consists of three layers:

- an oily layer;
- a watery layer;
- a layer of mucus.

Each layer has its own purpose.



The oily layer, produced by the **meibomian glands**, forms the outermost surface of the tear film. Its main purpose is to smooth the tear surface and reduce evaporation of tears.

The middle watery layer makes up most of what we ordinarily think of as tears. This layer, produced by the **lacrimal glands** in the eyelids, cleanses the eye and washes away foreign particles or irritants.

The inner layer consists of mucus produced by the **conjunctiva**. Mucus allows the watery layer to spread evenly over the surface of the eye and helps the eye remain moist. Without mucus, tears would not stick to the eye.

What causes dry eye?

Tear production normally decreases as we age. Although dry eye can occur in both men and women at any age, women are most often affected. This is especially true after menopause.

Dry eye can also be associated with other problems. For example, people with dry eyes, dry mouth, and arthritis are said to have Sjögren’s syndrome. (For more information on Sjögren’s syndrome, see the “resource” section on page 7 of this brochure.)

A wide variety of common medications — both prescription and over-the-counter — can cause dry eye by reducing tear secretion. Be sure to tell your ophthalmologist (Eye M.D.) the names of all the medications you are taking, especially if you are using:

- diuretics for high blood pressure;
- beta-blockers for heart or high blood pressure;
- antihistamines for allergies;
- sleeping pills;
- medications for “nerves”; or
- pain relievers.

Since these medications are often necessary, the dry eye condition may have to be tolerated or treated with eyedrops called artificial tears.

People with dry eye are often more prone to the toxic side effects of eye medications, including artificial tears. For example, the preservatives in certain eyedrops and artificial tear preparations can irritate the eye. These people may need special, preservative-free artificial tears.

How is dry eye diagnosed?

An ophthalmologist is usually able to diagnose dry eye by examining the eyes. Sometimes tests that measure tear production are necessary. One test, called the Schirmer tear test, involves placing filter-paper strips under the lower eyelids to measure the rate of tear production under various conditions. Another test uses a diagnostic drops to look for certain patterns of dryness on the surface of the eye.

How is dry eye treated?

ADDING TEARS

Eyedrops called artificial tears are similar to your own tears. They lubricate the eyes and help maintain moisture.

Artificial tears are available without a prescription. There are many brands on the market, so you may want to try several to find the one you like best.



Preservative-free eyedrops are available for people who are sensitive to the preservatives in artificial tears. If you need to use artificial tears more than every two hours, preservative-free brands may be better for you.

You can use the artificial tears as often as necessary — once or twice a day or as often as several times an hour.

CONSERVING YOUR TEARS

Conserving your eyes' own tears is another approach to keeping the eyes moist. Tears drain out of the eye through a small channel into the nose (which is why your nose runs when you cry). Your ophthalmologist may close these channels either temporarily or permanently. The closure conserves your own tears and makes artificial tears last longer.

OTHER METHODS

Tears evaporate like any other liquid. You can take steps to prevent evaporation. In winter, when indoor heating is in use, a humidifier or a pan of water on the radiator adds moisture to dry air. Wrap-around glasses may reduce the drying effect of the wind, but you should note that they are illegal to wear while driving in some states.

A person with dry eye should avoid anything that may cause dryness, such as an overly warm room, hair dryers, or wind. Smoking is especially bothersome.

Some people with dry eye complain of "scratchy eyes" when they wake up. This symptom can be treated by using an artificial tear ointment or thick eyedrops at bedtime.

Some people may find relief by supplementing their diets with omega-3 fatty acids, which are found naturally in foods like oily fish (salmon, sardines, anchovies) and flax seeds. Ask your ophthalmologist if you should incorporate oral supplements of omega-3 fatty acids into your dry eye treatment regimen, and if so in what form and dosage.

If other methods do not give you adequate relief from dry eye, your ophthalmologist may suggest that you use a prescription medication. One such medication, cyclosporine (Restasis®), works to resolve your symptoms by stimulating tear production. Steroid eyedrops may also be used, but are generally not recommended for long-term treatment.

Dry eye due to a lack of vitamin A in the diet is rare in the United States but is more common in poorer countries, especially among children. Ointments containing vitamin A can help dry eye if it is caused by unusual conditions such as Stevens-Johnson syndrome or pemphigoid. Vitamin A supplements do not seem to help people with ordinary dry eye.

RESOURCE

For more information on dry eye, contact the following organization:

Sjögren's Syndrome Foundation

6707 Democracy Boulevard
Bethesda, MD 20817
(800) 475-6473
www.sjogrens.org