

What Is Dry Eye?

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.

Sometimes people don't produce enough tears or the right quality of tears to keep their eyes healthy and comfortable. This condition is known as dry eye.

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.

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

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 a lot 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.

It may not sound logical that dry eye would cause excess tearing, but think of it 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.

Causes of Dry Eye

Hormonal changes are a main cause of [dry eye syndrome](#), causing changes in tear production. The hormonal changes associated with menopause are one of the main reasons why women are most often affected by dry eye.

Conditions that affect the lacrimal gland or its ducts — including autoimmune diseases like lupus and rheumatoid arthritis — lead to decreased tear secretion and dry eye.

Tear secretion also may be reduced by certain conditions that decrease corneal sensation. Diseases such as diabetes and herpes zoster are associated with decreased corneal sensation. So is long-term contact lens wear and surgery that involves making incisions in or removing tissue from the cornea (such as [LASIK](#)).

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;
- Anti-anxiety medications;
- 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 likely to experience the side effects of eye medications, including artificial tears. For example, the preservatives in certain eye drops and artificial tear preparations can irritate the eye. These people may need special, preservative-free artificial tears.

Another cause for dry eye is exposure to a dry, windy climate, as well as smoke and air conditioning, which can speed tear evaporation. Avoiding these irritants can offer [dry eye relief](#).

Dry Eye Symptoms

While it may sound strange, people with dry eye may find their eyes water quite a bit. This is because the eye is responding to the irritation of this condition. Dry-eye sufferers may find that they feel like they cannot keep their eyes open for very long. They may also find their eyes feel more uncomfortable after reading or watching television.

Dry eye symptoms usually 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.

Dry Eye Risk

Anyone can experience dry eye, though it is more common among women, particularly after menopause. Women who experience other hormonal conditions, such as pregnancy and menstruation, may also have dry eye symptoms.

People who have a condition called Sjögren's syndrome will usually have dry eye. So will others with similar systemic diseases like lupus, rheumatoid arthritis or some types of thyroid disease. Also, people who take certain over-the-counter and prescription medications can have dry eye due to reduced tear secretion.

People who have had [LASIK](#) or other refractive surgery, where their corneas have reduced sensation due to incisions or tissue removal, may also experience dry eye. Also, people who wear [contact lenses](#) long term are at risk for developing dry eye.

People who are sensitive to certain climates (such as windy, dry air) or to environmental factors like cigarette smoke or air conditioning may develop dry eye when they are exposed to these conditions.

Because people who work long hours at a computer are less likely to blink often, they are more susceptible to getting dry eye than people who don't spend a lot of time in front of a computer monitor.

Dry Eye Diagnosis

An ophthalmologist is usually able to diagnose dry eye by examining the eyes.

Sometimes tests that measure tear production are necessary. A 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 way your Eye M.D. can diagnose dry eye is by putting special dye drops in the eye then studying how long it takes for dry spots to develop on the cornea. The dye test can also be used to look for certain staining patterns that show any damage to the surface of the cornea.

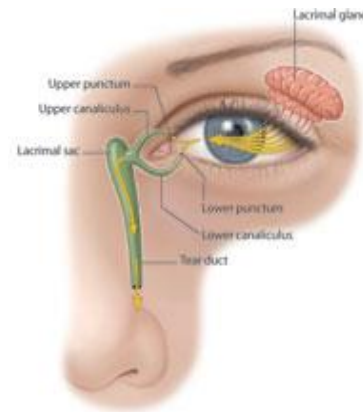
Dry Eye Treatment

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. This method conserves your own tears and makes artificial tears last longer.

A temporary method of closing the channels may involve the use of punctal plugs. The plugs are inserted into the punctum (tear duct) and work much like a dam by blocking your eye's drainage system. Your Eye M.D. may also choose to permanently close your tear ducts by using heat to seal the puncta closed.

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. Wraparound glasses may reduce the drying effect of the wind.

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 may find dry-eye relief by supplementing their diet with omega-3 fatty acids, which are found naturally in foods like oily fish (salmon, sardines, anchovies) and flax seeds. Ask your Eye M.D. if you should take supplements of omega-3 fatty acids and, if so, in what form and dosage.

If other methods do not give you adequate dry eye relief, your ophthalmologist may suggest that you use a prescription medication. One such medication, cyclosporine, works by stimulating tear production. Steroid eyedrops may also be used, but are generally not recommended for long-term treatment. Other treatment options may include ointments, gels and inserts.

Dry eye due to 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.

If you are bothered by dry eye, talk with your Eye M.D. for ways to find relief.