

# DRY EYE

## **What is dry eye?**

Normally, the eye is constantly bathed by tears. By producing tears at a slow and steady rate, the eye stays moist and comfortable. Sometimes people do not produce tears that keep their eyes healthy and comfortable. This condition is known as a dry eye.

The eye uses two different methods to produce tears. It can make tears at a slow and steady rate to maintain normal lubrication. These lubricating tears combine secretions from meibomian glands, lacrimal glands, and goblet cells. The eye can also produce large quantities of watery tears in response to irritation or emotion. These tears do not lubricate the eye.

## **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 a “dry eye” may sound illogical, but it can be understood as the eye’s response to discomfort and irritation. If the tears that lubricate the eyes are not adequate, the eyes become irritated. Irritation prompts the lacrimal gland to release a large volume of watery tears. This overwhelms the tear drainage system, and excess tears overflow from the eyes.

## **What is the tear film?**

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

The tear film consists of three layers:

- an oily layer (made by meibomian glands);
- a watery layer (made by lacrimal glands);
- a layer of mucus (made by goblet cells).

Each layer has its own purpose. The oily layer 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 cleanses the eye and washes away foreign particles or irritants. The inner layer consists of mucus and allows the watery layer to spread evenly over the surface of the eye. Without mucus, tears would not stick to the eye.

## **What causes dry eye?**

Tear production normally decreases as we age. Although dry eyes can occur in both men and women, women are more often affected. This is especially true after menopause. Dry eyes can also be associated with other problems. For example, people with dry eyes, arthritis, and a dry mouth, are said to have Sjögren’s syndrome. A wide variety of common medications, both prescription and over-the-counter, can cause dry eyes by reducing tearing. These include:

- diuretics for high blood pressure;
- beta-blockers for heart or high blood pressure;
- antihistamines and decongestants for allergies;
- pain relievers;
- medications for depression and anxiety;
- hormone pills.

## How is dry eye diagnosed?

An ophthalmologist is usually able to diagnose a 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. Other tests use diagnostic drops to evaluate the tear film and to look for certain patterns of dryness on the surface of the eye.

## How is dry eye treated?

**Artificial tears** - Eye drops 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. (The less expensive generic brands often contain irritating preservatives.) If you need to use artificial tears more than every two hours, preservative-free brands may be beneficial. You can use artificial tears as often as necessary, from once or twice a day to 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 eyes through small openings, called punctum, in the inside corners of the eyelids. Your ophthalmologist can temporarily close these punctum with dissolvable punctal plugs. (The plugs dissolve in about five to six months.) This is accomplished easily, quickly, and painlessly, with the patient sitting in the examining chair. This "no risk" treatment, called punctal occlusion, conserves your own tears and makes artificial tears last longer.

**Prescription medications** - Your ophthalmologist may suggest that you use prescription medications.

- One such medication, cyclosporine (Restasis®), works to resolve your symptoms by stimulating tear production.
- Steroid eye drops may also be used, with certain restrictions

**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 adds moisture to the dry air. Avoiding a smoky environment is important. Some people with dry eyes complain of "scratchy eyes" when they wake up. This symptom can be treated by using a lubricating ointment 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.

Meibomianitis is a condition that affects the eye lids and causes dysfunctional "oily tears". Treating this condition with lid hygiene and antibiotics can help dry eyes.