

A close-up photograph of a woman with blonde hair applying eye drops to her right eye. She is holding a white eye drop bottle with her right hand and gently pulling down her lower eyelid with her left index finger. The background is a soft, out-of-focus light blue and white.

DRY EYE DISEASE

BEYOND EYE DROPS

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EYE CENTER

Dry eye symptoms can vary from one individual to another. For some, it's a stinging or burning sensation of the eye, while others describe a gritty feeling making it really hard to see or even be comfortable.

Similarly, what causes dry eye in one patient may not result in the same dry eye symptoms in another patient. In fact, dry eye causes range from aging to antidepressant use to autoimmune disorders.

For these reasons, accurate diagnosis and appropriate evaluation are critical to help initiate the right management and treatment pathways. Using the right diagnostic tools makes a huge difference in the relief of symptoms.

There are several tests available to help with the diagnosis of dry eye disease, including epithelial staining, meibomian gland evaluation, tear osmolarity, the Schirmer test, and tear film break-up time (TBUT):

- Epithelial staining is used to determine how quickly your tears dry out, as well as assess the condition of your eyes' surface.
- A meibomian gland evaluation is performed to determine if this gland is responsible for your condition.
- Tear osmolarity helps doctors classify the type of dry eye and understand the severity of the disease.
- The Schirmer test is used to determine if your eyes produce enough tears to keep adequately moist.
- And TBUT is used to test for evaporative dry eye, a subtype of the disease.

Doctors may use a combination of different tests and technologies, in addition to a comprehensive eye exam, to arrive at the right diagnosis. This process differs from patient to patient, as does the resulting treatment plan.

Whenever you experience dry eye symptoms over a long period of time, it's always best to [schedule an appointment](#) with a dry eye specialist who can accurately diagnose dry eye disease and recommend the right therapy based on your test results.





DRY EYE FACTS

Every day, millions suffer from dry eye symptoms. The Tear Film & Ocular Surface Society estimates that [3.2 million women and 1.6 million men](#) aged 50 years and above have moderate to severe cases of dry eye in the United States.

Viewing dry eye as merely a chronic condition characterized by insufficient lubrication on the eye surface isn't enough for proper management. This explains why using eye drops for dry eyes may not work for some sufferers.

In this section, we'll take a closer look at dry eye causes, risks factors, and symptoms. We also look at the often-undervalued role of regular visits to your eye doctor for monitoring of subtle eye changes that you may not be aware of.

WHAT CAUSES DRY EYE?

Before creating a dry eye management plan, recognizing the root cause of the problem is a priority.

Ideally, the proper balance of water, oil, and mucus must be maintained to allow tears to lubricate and consequently protect your eyes. Deficiency of these components — both in quality and quantity — lead to dry, itchy eyes.

In a nutshell, dry eye disease can be categorized with the following subtypes:

- *Evaporative dry eye* - This subtype is often attributed to meibomian gland dysfunction. There are approximately 25 to 40 meibomian glands in your eyelids that secrete oils to keep your tears from evaporating too quickly.
- *Aqueous tear-deficient* - This subtype is a result of your lacrimal glands' failure to produce the watery component in your tears to keep the eyes sufficiently moistened.

In many cases, dry eye symptoms may arise from a combination of both subtypes.

WHAT ARE ITS RISK FACTORS?

The previously mentioned dry eye subtypes may be a result of one or combination of the following risk factors:

- Frequent use of contact lens: It's not uncommon for some people to give up wearing contact lens due to dry eye discomfort.
- Low blink rate from prolonged periods of working in front of computers, smartphones, and other digital screen devices.
- Natural process of aging: [According to the American Optometric Association](#), the majority of those over 65 experience some symptoms of dry eyes.
- Women tend to suffer more than men because of the increased frequency of hormonal shifts. These mostly result from menstruation, pregnancy, and menopause but also can include regular use of contraceptives and hormonal therapies.
- Side effects of certain medications including but are not limited to blood pressure medications, antidepressants, diuretics, antihistamines for allergies, pain relievers, and sleeping pills.
- Autoimmune problems and chronic conditions including diabetes, thyroid issues, lupus, Sjogren's syndrome, and rheumatoid arthritis.
- Environmental extremes: Indoor spaces with forced air heating systems and air conditioning can reduce indoor humidity and quickly lead to tear evaporation. On the other hand, outdoor environments with windy or dry conditions can also lead to evaporative dry eye symptoms.
- Vitamin deficiency: Vitamin D in particular has been shown to have a protective role in the development of dry eye, although this finding is based on a study of [postmenopausal women with a Vitamin D deficiency](#). The U.S. National Institutes of Health (NIH) states that [Low Vitamin A levels in children](#) can also lead to dry eye problems.
- Inflammation of the eyelids and its surrounding structures.
- Temporary side effect of LASIK and other refractive eye surgeries.
- Smoking: According to an analysis of [research on smoking and the incidence of dry eye](#) performed between January 1964 to December 2015, current and former smokers are at risk for developing of dry eye.



WHAT ARE DRY EYE SYMPTOMS?

It is worth noting that dry eye symptoms vary significantly. They are not by themselves good predictors of the condition.

The only way to be certain that you have chronic dry eye is to have an eye doctor perform tests including osmolarity testing. Your dry eye symptoms may include but are not limited to the following:

- Burning and/or stinging sensation in the eye
- Feeling of something foreign is stuck in the eye (often reported as gritty or sandy feeling)
- Chronic itchiness and/or redness
- Discomfort with prolonged use of contact lens
- Blurred vision, particularly at the end of the day
- Increased sensitivity to light

- Excessive watering of the eyes following episodes of dryness
- Frequent sore eyes
- Feeling of eyelid heaviness
- Eyelids that tend to stick together when you wake up

In rare cases, untreated dry eye can potentially lead to keratitis (inflammation of the cornea). This could further change to corneal ulceration and vision loss. Sharp pain, extreme sensitivity to light, and sudden deterioration of vision are symptoms indicating severe dry eye requiring immediate and serious medical help.

Most dry eye sufferers have multiple symptoms but only one or two of these may be reasons for visiting an eye doctor for the first time. Often, it's not until they're asked about the other symptoms that they are aware of its occurrence.



DRY EYE BY ANY OTHER NAME

In the [current DEWS II definition](#), dry eye is described as:

“Dry eye is a multifactorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiological roles”

That definition comes from the Dry Eye Workshop (DEWS), an organization composed of an international panel of dry eye experts whose mission is to update the public's understanding of dry eye.

You've probably come across the terms chronic dry eye, dry eye disease, and dry eyes. As a sufferer seeking relief and dry eye management, it is important to note that all of these medical terms refer to the same dry eye as defined by DEWS' panel of international dry eye experts.



TFOS DEWS II Definition

Other names for dry eye include the following:

- Keratoconjunctivitis sicca (KCS)
- Dysfunctional tear syndrome
- Lacrimal keratoconjunctivitis
- Evaporative tear deficiency
- Aqueous tear deficiency,
- LASIK-induced neurotrophic epitheliopathy (LNE)

DRY EYE MYTHS

As with many medical conditions unlikely causes and cures abound. Dry eye is no different. There are many myths surrounding vision and dry eye disease.

Eating carrots will improve your eyesight. Reading in the dark will make you go blind in no time. Dry eye causes dark circles. Frequent use of contacts result in developing dry eye disease. Are these statements fact or fiction?

To help you find the right dry eye treatment, it's important to set facts apart from myths. This section is dedicated to answering common dry eye questions.



CAN DRY EYES BE CAUSED BY ALLERGIES?

Yes. It's possible for dry eye to result from seasonal allergies. A [2015 research paper](#) from the American Academy of Ophthalmology found a strong connection between spring allergens and dry eye. In fact, the researchers found out that both pollen counts and dry eye cases reach a yearly peak in April — nearly 21 percent of patients seen were diagnosed with dry eye.



CAN DRY EYES CAUSE STYES?

Yes. First, the National Rosacea Society notes that the occurrence of dry eye and stye is [strongly linked](#) to ocular rosacea. Second, the lack of tears to wash debris and bacteria away from the eyes can potentially result in infection on the edge of an eyelid (styes).



CAN DRY EYES CAUSE LIGHT SENSITIVITY?

Yes. Also known as photophobia, sensitivity to light [may result from dry eyes](#).



CAN DRY EYES CAUSE BLURRED VISION?

Yes. It can cause fluctuating vision throughout the day and even cause a change to your glasses or contact lens prescription. This is especially common when working on electronic devices such as computers and smart phones, as well as reading in general. During these reading tasks [our blink rate is reduced](#), which leads to decreased tear and oil secretions in the eye.





DO GLASSES LESSEN THE CHANCE FOR DRY EYE?

Wearing wraparound glasses can help reduce dry eye risk by slowing down tear evaporation from the eye surfaces.



DO DRY EYES CAUSE DARK CIRCLES?

Dry eye can potentially lead to under eye puffiness if you have an eye infection. However, there's no solid evidence that dry eye disease can influence the appearance of dark under eye circles.



DO DRY EYES CAUSE EYELID SWELLING?

It's often the other way around. Dry eye is often a symptom of conjunctivitis (inflammation of the eyelids).



DO DRY EYES CAUSE EYE PAIN AND REDNESS?

Yes. In fact, eye pain and redness are classic signs of dry eye disease.



DO CONTACTS MAKE DRY EYE MORE LIKELY?

This is true. Wearing contacts means there's less oxygen supply to the cornea, the clear window on the surface of the eye. Contacts also disrupt the normal flow of tears over the cornea, that can lead to premature or rapid evaporation of tears.

BEST TREATMENTS FOR DRY EYE

There is no specific cure for dry eye. The good news is you can take steps to increase comfort, significantly reduce symptoms, and prevent complications.

Below is a list of treatments that your doctor can recommend either as a standalone or in combination with each other.

a. Over-the-counter eye drops: Artificial tears are over-the-counter eye drops for dry eyes that come in a wide variety of ingredients and thickness (viscosity). These range from the light, watery drops for daytime use to the thick, gel-like drops that work well in retaining moisture while you're asleep. They also differ dramatically in their composition from one brand to another, so getting recommendations from a dry eye specialist on the right eye drops to use for you is the best approach. Furthermore, a specialist can advise you if the drops have no effect because you have moderate to severe dry eye and require further treatment.

b. Prescription eye drops: Your eye doctor may also prescribe nonsteroidal anti-inflammatory eye drops like Restasis or Xiidra, or steroid eye drops.

Restasis contains cyclosporine, an anti-inflammatory medication that reduces corneal damage and increase tear production at the same time. Xiidra has been shown to reduce the signs and symptoms of dry eye.

c. Intense Pulsed Light (IPL): When chronic dry eye is a result of meibomian gland dysfunction (evaporative dry eye), [IPL can help](#) reduce dry eye symptoms, according to the Review of Ophthalmology. In this procedure, the hand-held IPL device transmits light into the skin surrounding the eyes.

Just like a warm compress, the light generates heat in the skin's deeper layers and stimulates the blocked meibomian glands to secrete meibum, the oily substance that slows the evaporation of tears.

FDA APPROVED DEVICES

LipiFlow: LipiFlow Thermal Pulsation System combines heat and pressure to the inner eyelid to remove gland obstructions.

iLux: The iLux™ System is a medical handheld device used to apply localized heat and pressure therapy to the eyelids to express the meibomian gland.

LipiView: LipiView assesses tear fluid to determine the reason for dry eye.

Barnet Dulaney Perkins Eye Center participated in a research study for a comparison between the iLux device and LipiFlow.

d. Punctual plugs: To keep tears from evaporating quickly, tiny plugs made of silicone, acrylic or hydrogel are inserted into the small openings of your tear drainage ducts (innermost part of the upper and lower eyelids).

This minimally invasive procedure helps reduce mild to moderate dry eye symptoms.

e. Punctal cautery: This is a severe dry eye treatment. Punctal cautery is a simple surgery that permanently seals the openings of the tear drainage ducts. Consequently, tears are retained in the eye for longer periods.

f. Lubricants: Slow-release and water-soluble lubricants like Lacrisert prolongs the tear film breakup time by thickening tear films. It is inserted in the inferior [conjunctival cul-de-sac of the eye](#). That's the area of the lower eyelid where the mucous membranes (conjunctiva) lining the eyelid meets the eyeball.

A single Lacrisert application in a day typically offers relief for individuals with moderate to severe symptoms of chronic dry eye.

g. Other treatments include meibomian gland expression, warm compresses, Lipiflow, and treating underlying conditions.

ENJOYING EYE RELIEF

Due to the varying degree of dry eye symptoms and underlying causes, there is a great deal of confusion and misunderstanding in terms of seeking relief and symptom management.

It doesn't help that the condition is often referred to using different names — from dry eye disease to chronic dry eye. Not to mention that excessive tearing is one of its hallmark symptoms, a total opposite to dry eyes.

If you didn't get your questions answered or have already recognized that you may have dry eyes after reading this guide, please go ahead and schedule an appointment with us by [filling out this contact form](#) today.



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