



No more TEARS

By Kathryn S. Taylor

Spot solutions for dry eye disease

Not a dry eye in the house" is a highly unlikely scenario, considering that 26 million Americans experienced dry eye in 2012, with a projected 3 million increase by 2022.¹ "Dry eye is probably one of the most common conditions that eye care professionals see, maybe second only to nearsightedness," says Richard Adler, MD, an ophthalmologist with Belcara Health in Baltimore.

Tears are an underappreciated component of everyday life. In fact, they usually go unnoticed as they keep eyes moist and remove foreign bodies and microorganisms that could lead to eye infection and damage to the cornea.² Tears also keep the surface of the eye smooth and clear to aid vision clarity.³

Dry eye disease (DED), also called *dry eye syndrome* or just *dry eye*, occurs when the eye's surface has a chronic lack of adequate moisture and lubrication,² which results from tears that are low in volume, have poor quality, or evaporate too rapidly.³

A deeper look

The tear film that covers eyes is made up of three components, excreted by three different parts of the eye²:

- **The meibomian glands** in the eyelids supply an oily (lipid) component.² The lipid layer keeps the tear film from evaporating too rapidly and enhances lubrication.²
- **The lacrimal glands**, located behind the upper eyelids' outer corner, yield the

watery (aqueous) component of tears.²

- **The conjunctiva**, a membrane that covers the white of the eye (i.e., the sclera), produces a mucous (mucin) component.² Mucin helps anchor tears and spread them across the eye's surface.²

A thin mucous layer lies closest to the eye with a thicker aqueous layer on top of that, all covered by a lipid layer.³

A sight for sore eyes

Dry eye causes a range of symptoms²:

- Burning feeling
- Sensation of having something in the eye
- Itchiness
- Achiness
- Fatigue or soreness
- Redness
- Blurred vision
- Light sensitivity
- Dryness
- Sensation of heaviness in the eyes

Watery eyes are an unexpected symptom of DED, as the eyes may overproduce the watery component in defensive *reflex tearing*. However, this aqueous component does not stay on the eye long enough to provide any real benefit.²

"Many patients, possibly *most* patients, don't realize that their problem is related to dry eyes," says Patti Chandler, CMA (AAMA),

an administrative assistant at the Grossnickle Eye Center in Warsaw, Indiana. "For example, excessively watery eyes or blurry vision can indicate dry eyes. Those symptoms don't usually make patients think of [DED]."
Additionally, she notes unchecked corneal dryness can lead to nerve damage so that patients cannot feel the dryness of their eyes.

When left untreated, DED can progress to significant inflammation and scarring on the surface of the eye,² leading to blindness in extreme cases.

Still, the effects of DED can be significant, even in the early stages, notes Dr. Adler. "Some studies have identified that the symptoms associated with mild to moderate dry eye can be as impactful on a person's quality of life as moderate to severe angina," he says. "Early disease [may affect] things like driving, watching TV, reading, [and] using computers—so even mild disease can be considered serious."

Women experience DED at twice the rate of men, and prevalence increases at 50 years and older.¹ Other risk factors for DED include the following²:

- Screen usage (e.g., digital devices, computers, and television), which causes infrequent blinking
- Contact lenses
- Menopause
- Dry or windy outdoor environments
- Indoor environments with decreased humidity caused by air conditioning,

- forced air heating, or ceiling fans
- Frequent flying, due to dry cabin air in airplanes
- Smoking
- Some systemic diseases (e.g., diabetes, thyroid conditions, lupus, rheumatoid arthritis, and Sjögren syndrome)
- Certain medications (e.g., antihistamines, antidepressants, some blood pressure medications, and birth control pills)
- Lagophthalmos (a condition in which the eyelids do not close completely when blinking or sleeping)
- LASIK and other corneal refractive surgeries

Notably, children are increasingly at risk for DED, as a result of heavy screen usage.²

Eye spy

Testing for DED begins with observation. A patient's history should be reviewed, with the physician searching for health problems or medications that may be at the root of the DED.³ Environmental factors should be taken into consideration as well.¹

A physical evaluation of the eye, including the lid and blinking, comes next.³ The eyelids and cornea can be examined using bright light and magnification to check for scarring and other abnormalities.¹ Several other tests are available¹:

- Visual acuity measurement
- Slit-lamp examination
- Staining of the cornea and tear film
- Measurement of how quickly the tear film breaks up
- Schirmer test, which measures the tear production rate
- Tear concentration (i.e., osmolality) measurement

Elliott Caine, OD, an optometrist at the eponymous Dr. Elliott Caine Optometry in Los Angeles, typically notes the thickness of the tear and the depth of the lacrimal lake (i.e.,

amount of fluid that has accumulated behind the lower lid). He adds yellow fluorescein drops to all patients' eyes to test for pressure, which provides an additional benefit: "When a patient blinks their eyes and the fluorescein breaks up really fast instead of smoothly coating the entire cornea or conjunctiva, that lets me know that they have dry eye as well."

See if eye care

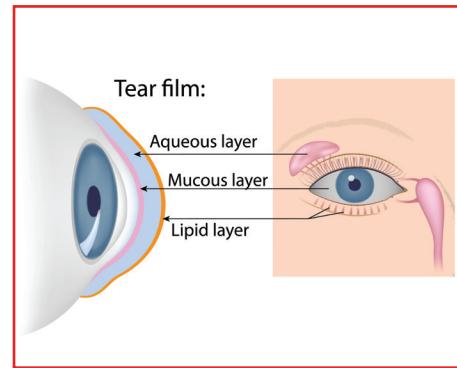
Inflammation is both a cause and result of DED. "It's a cycle [that] needs to be interrupted if you want to treat the dry eyes," says Dr. Adler. Therefore, the inflammation needs to be treated first.

Prescription drops may be necessary to treat inflammation, while preservative-free, over-the-counter artificial tear solutions are generally the easiest and most accessible way to treat DED.³ High-viscosity drops last longer than low-viscosity ones but may blur vision for a short time.¹ Some drops work better for evaporative DED while others are more effective at treating aqueous deficiency varieties.¹

Some prescription eye drops, such as cyclosporine (Restasis) and lifitegrast (Xiidra), act as immunomodulators,¹ which suppress the immune system to reduce inflammation. Naturally, that has drawbacks, because immunity is compromised.¹ Steroid eye drops can rapidly decrease inflammation but should not be used for extended periods. Patients can use steroid eye drops with cyclosporine and artificial tears.¹

When adding moisture to the eyes via over-the-counter or prescription artificial tears does not work, measures must be taken to preserve the naturally occurring tears. One means of doing this involves blocking the tear ducts through either removable gel-like or silicone plugs or permanent surgery.³ Other in-office options include meibomian gland expression or intense pulse light treatments via a physician.¹

Simple diet, lifestyle, and makeup changes can help alleviate DED, according to Chandler. "A diet for healthy eyes should include dark, leafy vegetables—spinach and kale—and healthy fats, [such as] nuts [and] fish—tuna, salmon, [and] halibut," she says. "Oysters are



also very good for eye health. Keep your eyes clean. Replace mascara regularly, remove makeup before sleeping, and avoid getting any facial cleansers or makeup in your eyes. Some environmental recommendations include avoiding cigarette smoke, dust, and other air pollutants. Fans, hair dryers, and windy weather can also aggravate dry eyes. When possible, limit exposure to these irritants. Wraparound sunglasses can offer some protection on windy days." Staying hydrated can also relieve DED.³

Dr. Caine cautiously notes that an omega-3 supplement may help. "We all respond differently to nutrition as well as to pharmaceuticals. So sometimes you [have to] keep trying."

Another minimally invasive tactic Dr. Caine recommends is massaging eyes at the lash line with a hot washcloth to unblock partially blocked meibomian glands.

"I've discovered that many people don't realize that this is a treatable condition," says Chandler. "Educating them that there are ways to get relief from their symptoms can be the beginning of a very satisfying journey for these potential patients." ♦

References

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