

# Prevention Column

DRY EYE DISEASE – JULY 2021

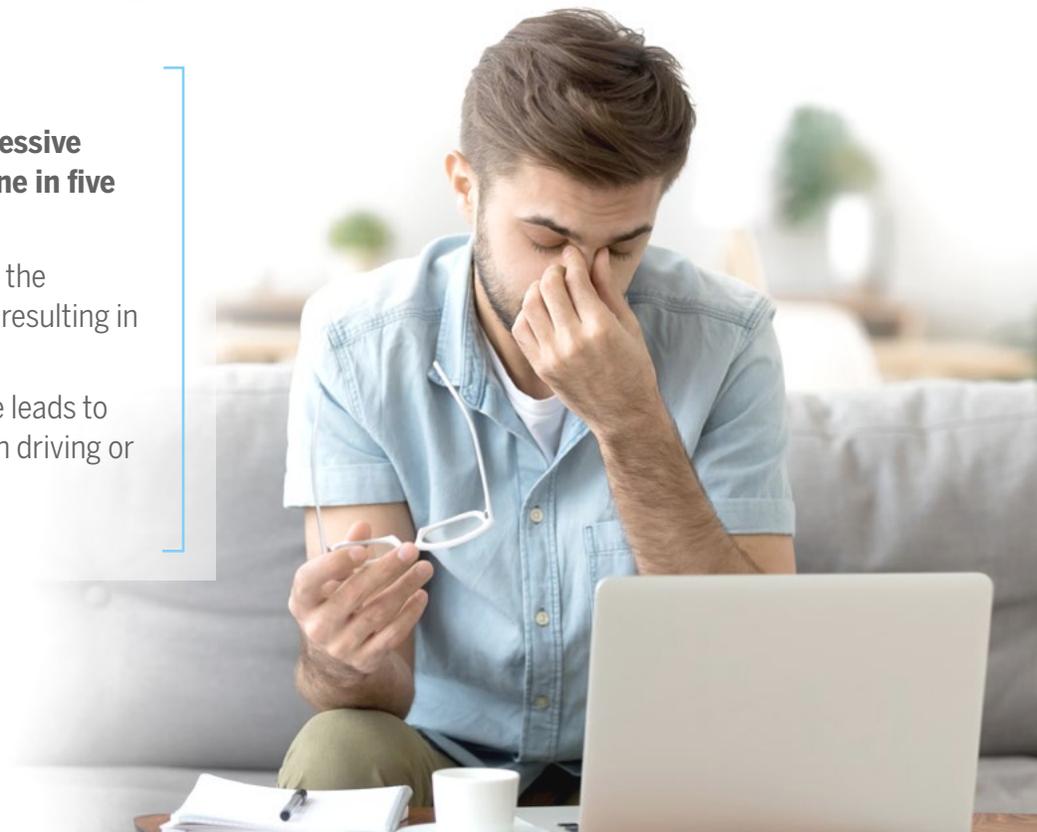
## Dry eye disease: More to it than meets the eye!

Everyone knows that good, clear vision is important to our day-to-day functioning. What most people don't know is that dry eye can impede that functioning. It's more than just a bit of discomfort; dry eye can actually interfere with optimal visual performance and compromise the long-term health of our eyes.

- Dry eye disease is a **chronic, progressive condition** that affects more than **one in five Canadians**.<sup>1</sup>
- The use of **digital screens** reduces the frequency and quality of our blinks, resulting in significant dryness of the eye.
- Instability of the tear film on the eye leads to vision disturbances, especially when driving or working on a screen.

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# Caring for the health of your eyes

In Canada, an estimated 20% of the population is affected by dry eye disease. And many of them don't even know it.<sup>1</sup> What's more, this condition has long been under-diagnosed by healthcare professionals (optometrists, ophthalmologists, physicians and pharmacists) who mistakenly saw it as a minor ailment.

On the contrary, this condition has a direct impact on many of our daily activities, including reading, driving and using digital screens (computer, TV, tablet, etc.). Some studies<sup>2</sup> even compare the impact of dry eyes on our overall quality of life to the impact of having angina. The financial impact is considerable as well. Those who suffer from dry eye can spend up to \$13,000 for the necessary treatment.<sup>3</sup> By no means a drop in the bucket!

## Do you suffer from dry eye?

Most people are familiar with the classic symptoms of dry eye: burning, redness, watery eyes and feeling like there's sand in your eye. However, what many people don't know is that when tears evaporate too quickly, visual instability can occur. This can be perceived as a decrease in visual acuity and the need for a stronger prescription.

In its mild form, dry eye is fairly episodic. The symptoms are exacerbated by harsh conditions like wind, heat, dust and airborne allergens. What's more worrisome is the chronic, progressive form. It's a multifactorial disease whose symptoms gradually get worse as it evolves, ultimately damaging the surface of the eye, sometimes with a significant impact on the person's vision. ■

### ANATOMY OF THE TEAR FILM

Tears form a protective coating over our eyes called the **tear film**, which is essential to the health of our eyes. This film:

- Lubricates the surface tissues
- Maintains a smooth, uniform optical surface
- Nourishes the cornea
- Protects against infections
- Eliminates debris and foreign bodies

The composition of the tear film is complex, but can be broken down into **three distinct layers**:

#### LIPID LAYER

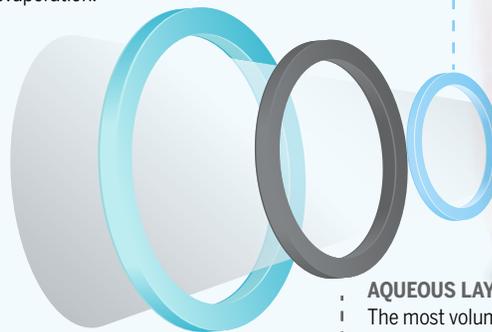
The thinnest, most superficial layer that covers the tear film and prevents evaporation.

#### MUCIN LAYER

The inner layer of the tear film that helps the tears stick to the surface of the eye.

#### AQUEOUS LAYER

The most voluminous layer; it contains nutrients and immune agents, and is produced mainly by the lacrimal glands.





**“OVER 86% OF DRY EYE CASES ARE THOUGHT TO BE ASSOCIATED WITH MEIBOMIAN GLAND DYSFUNCTION (MGD).<sup>4</sup>”**

## Better understanding means better detection

For a long time, experts believed the symptoms of dry eye were caused by a reduction in tears. Now we know that the most frequent cause of dry eye is **accelerated evaporation from the tear film**.

Every time we blink, 20 to 30 tiny glands in our eyelids are mechanically stimulated. These are called **meibomian glands** and their oily secretion forms the **lipid layer** of the tear film.

A reduction in the quality of these secretions, as well as less frequent blinking, can lead to “evaporative” dry eye.

### Meibomian gland dysfunction (MGD)

This condition is characterized by a **thickening of the oily secretions**, which causes the meibomian glands to become obstructed and over time leads to permanent atrophy. Over 86% of dry eye cases are thought to be associated with meibomian gland dysfunction (MGD).<sup>4</sup>

What causes MGD? Most of the time, it’s caused by **dysfunctional blink patterns**. And the main factor that affects our blink patterns is our use of **digital screens**, which have become an unavoidable part of daily life. Early detection of MGD and immediate treatment from the first signs of this condition are important to avoid irreversible tissue loss.

Fortunately, new imaging technologies now make it possible to measure decreased lipid production and to see meibomian gland damage. It’s also possible to observe the appearance of poor blinking patterns and to measure hyperconcentration and the presence of inflammatory factors in an abnormal tear film.

### OTHER possible causes

A production deficiency in the aqueous layer, called **lacral insufficiency**, is much less frequent (14% of dry eye cases).<sup>4</sup> This type of dryness is often associated with auto-immune diseases such as rheumatoid arthritis, lupus erythematosus or Sjogren’s syndrome.

Lacral insufficiency can also be secondary to certain medications, including oral antihistamines and diuretics, which negatively impact production from the main lacral gland. ■



## EFFECTIVE NEW TREATMENTS

In 2017, a landmark study by the *Tear Film and Ocular Surface Society (TFOS)*<sup>5</sup> completely changed how dry eye disease is diagnosed and managed. Both the assessment and treatment of this condition are based on a protocol established by a wide range of eye care professionals.

Therapeutic alternatives to artificial tears have multiplied thanks to technological and pharmacological advances in recent years. To increase their effectiveness, treatments target the cause of the dryness instead of just relieving the symptoms. The treatments target four key factors:

1. Inflammation
2. Instability of the tear film
3. Obstruction of the meibomian glands
4. The presence of debris along the edge of the eyelids (biofilm)

Of the many solutions available, some can be used at home, such as therapeutic drops, oral medication or scleral lenses. Others require a clinical procedure, such as thermomechanical treatments, light-based treatments or eyelid micro-exfoliation. A qualified eye care professional can suggest the best solution based on the patient's profile, as well as basic treatments to maximize its effectiveness (artificial tears, heating masks, omega-3<sup>6</sup> supplements, etc.). ■

## Best practices for preventing dry eye disease

**The main risk factors for dry eye disease are well-known. If you're experiencing symptoms of dry eye, it's especially important to consult an eye care professional immediately if you:**

- Are an older woman
- Use digital screens
- Suffer from acne rosacea
- Have eye allergies
- Take certain medications
- Wear contact lenses
- Have undergone cataract or refractive surgery

There are also steps you can take to avoid experiencing dry eye or to keep it from getting worse. Controlling your environment to optimize ventilation and humidity helps. So does regular blinking, especially when using digital screens for prolonged periods. There are free apps that can help you with that! Lastly, regular visits to your eye care professional will help with the detection and proactive management of dry eye disease. ■

## In conclusion

Dry eye disease is a serious condition. Don't let it interfere with your eye health or your quality of life. Talk to an eye care professional to find out if you suffer from dry eye and to start getting the treatment you need today! ■

1. Caffery, B. et al. *Prevalence of dry eye disease in Ontario, Canada: A population-based survey*. *Ocular surface*, vol. 17, No. 3, July 2019, p. 526-532. doi: 10.1016/j.tos.2019.02.011.

2. Torrance, GW. *Utility approach to measuring health-related quality of life*. *J Chronic Disease*, Vol. 40, No. 6, 1987, p. 593-603; Shiffman RM et al. *Utility assessment among patients with dry eye disease*. *Ophthalmology*, Vol. 110, 2003, p. 1412-1419.

3. Yu, J. et al. *The economic burden of dry eye disease in the United States: a decision tree analysis*. *Cornea*, Vol. 30, No. 4, 2011, p. 379-387.

4. Lemp, M. et al. *Distribution of aqueous-deficient and evaporative dry eye in a clinic-based patient cohort, a retrospective study*. *Cornea*, Vol. 31, No. 5, May 2012, p. 472-487. doi:10.10971.

5. Craig, J. et al. *TFOS DEWS II Report Executive Summary*. *Ocular surface*, Vol. 15, No. 4, October 2017, p. 802-812.

6. *Dry Eye Assessment and Management Study Research Group. n-3 fatty acid supplementation for the treatment of dry eye disease*. *New England Journal of Medicine*, April 13, 2018; Sheppard, JD et al. *Long Term Supplementation with n-6 and n-3 PUFAs Improves Moderate-to-Severe Keratoconjunctivitis Sicca*. *Cornea*, Vol. 32, No. 10, 2013, p. 297-1304. doi: 101097.