



## Dry eyes

Haley Smith, BPharm

### Introduction

Dry eye syndrome is a common and often chronic condition, particularly in older patients.<sup>1</sup> Dry eyes occur when there are insufficient tears to provide moisture on the surface of the eye.<sup>1-3</sup> Tears lubricate the eye and stop the surface from drying out. A thin film of tears is swept over the eye surface every time a person blinks. A watery layer of tears is topped with an even thinner coat of lipids (fatty compounds) that help to preserve the film.

To maintain eye comfort and health, the tear film needs to remain intact between blinks.<sup>4</sup> A disturbance of the tear film characterises dry eye syndrome. This abnormality may result in disruption of the eye surface causing a variety of symptoms and interference with quality of life.<sup>5</sup>

Studies have shown the prevalence of dry eyes ranges from five per cent to as high as 50 per cent in different populations across the world.<sup>2</sup> Over time, the resulting dryness may damage the surface of the eyeball.<sup>4</sup> Consequences of dry eyes include subtle but constant eye irritation to significant inflammation and even scarring of the front surface of the eye.<sup>2</sup>

### What causes dry eye syndrome?

An adequate and consistent layer of tears are necessary for maintaining the health of the surface of the eye and for providing clear vision.<sup>1,2</sup> With each blink of the eyelids, tears spread across the front surface of the eye, known as the cornea. Tears provide lubrication, wash away foreign matter in the eye, reduce the risk of eye infection and keep the surface of the eyes smooth and clear.<sup>2</sup> Tear production may be inadequate for many reasons. For example, either not enough tears are produced to keep the eye surface moist, or tears are of a poor quality and do not stay on the surface of the eyes long enough. This may be due to increased tear evaporation

and an imbalance in the makeup of the tears.<sup>3</sup> This results in tear instability and dry eyes.<sup>2</sup>

### Symptoms

Dry eye feels uncomfortable and usually affects both eyes.<sup>3</sup> People may experience the following symptoms:<sup>1-3</sup>

- A burning or stinging sensation in the eyes
- Itchiness (particularly in the corners of the eyes)
- A feeling of grittiness, or the sensation of having a foreign object in the eyes
- Redness
- Sensitivity to light
- Watery eyes, which is the body's response to the irritation of dry eyes
- Eye fatigue
- Occasional blurred vision
- Difficulty wearing contact lenses
- Stringy mucus in or around the eyes
- Difficulty with night time driving

### Risk factors

Several factors are associated with a higher risk of developing dry eyes.<sup>1,2</sup> (See Tables 1, 2 and 3)

### Treatment

Occasional or mild cases of dry eyes are often managed using over-the-counter drops, gels or ointments to help provide more moisture and lubricate the surface of the eye.<sup>1-5</sup> These are often referred to as 'artificial tears'.<sup>3,4</sup> Preservative-free artificial tear solutions are recommended because they contain fewer additives, which may further irritate the eyes.<sup>1</sup> Lubricating eye ointments are usually thicker than eye drops and gels. Because ointments are so thick, they last much longer than eye drops and gels. Ointments to lubricate the eyes are generally applied overnight during sleep as they may blur vision if used during

**Table 1:** Common risk factors associated with decreased tear production**Decreased tear production**

*Common causes of decreased tear production include:*<sup>1-5</sup>

**Aging**

Dry eyes are a part of the natural aging process. Dry eye syndrome may occur at any age. However, it becomes increasingly more common later in life, especially after the age of 50, as a smaller volume of tears is produced.

**Health conditions**

People with certain medical conditions such as thyroid-associated diseases, diabetes, rheumatoid arthritis and lupus are more likely to have dry eye.

**Medications**

Tear production may be reduced when taking certain medications. These include birth control pills, antihistamines, beta-blockers, diuretics, decongestants and antidepressants.

**Laser eye surgery**

Symptoms of dry eyes related to this procedure are usually temporary.

**Tear gland damage**

Occurs from inflammation or radiation.

**Table 2:** Common risk factors associated with increased tear evaporation**Increased tear evaporation**

*Common causes of increased tear evaporation include:*<sup>1-3,5</sup>

**Environmental conditions**

Ceiling fans, air conditioning and forced air heating systems decrease indoor humidity and/or hasten tear evaporation, causing dry eye symptoms. Frequent flying, exposure to smoke, wind and dry climates contribute to increased tear evaporation resulting in dry eye symptoms.

**Computer use**

Blinking less often, which tends to occur while working at a computer, using a smartphone or other portable digital device for long periods of time, may also contribute to tear evaporation and increased risk of dry eye symptoms.

**Eyelid problems**

Eyelid problems such as out-turning of the lids (ectropion) and in-turning of the lids (entropion).

**Table 3:** Additional factors contributing to dry eyes

*Other factors that make it more likely for a person to experience dry eyes include:*<sup>1-3,5</sup>

**Contact lens wear**

Long-term use of contact lenses may be a factor in the development of dry eyes.

**Gender**

Women are more likely to develop dry eyes due to the use of oral contraceptives and hormonal changes caused by pregnancy and menopause.

**Diet**

Eating a diet that is low in omega-3 fatty acids, (which are found in fish, vegetable oils and walnuts) or in vitamin A, (which is found in broccoli, liver and carrots).

the day. Examples of artificial tears and lubricating products include Optive<sup>®</sup>, Tears Naturale<sup>®</sup>, Celluvisc<sup>®</sup>, Refresh<sup>®</sup>, Murine<sup>®</sup> and Systane<sup>®</sup>.<sup>5</sup> The Optive<sup>®</sup> range contains sodium carboxymethylcellulose, glycerine, levocarnitine and erythritol and is promoted to lubricate the surface of the eye and help restore osmotic balance.<sup>6</sup> A recent clinical trial investigated the effects of eyedrops containing cross-linked hyaluronic acid and co-enzyme Q10 (e.g. VisuXL<sup>®</sup>). The treatment showed significant effectiveness and represents a new option in dry eye treatment.<sup>7</sup>

## Self-care and prevention

It is advised to pay attention to situations that are most likely to cause symptoms of dry eye.<sup>3</sup> The following measures may help to relieve symptoms and prevent complications:<sup>1,3,5,7</sup>

- Increase the humidity in the air e.g. a humidifier may add moisture to dry indoor air.

- Purposefully blink more often, especially when spending long times in front of a computer or other electronic devices.
- Apply warm compresses.
- Keep eyelids clean, especially if they get crusty.
- Taking a fish oil supplement or other high quality source of omega-3 fatty acids (found in oily fish, tofu, linseeds, chia seeds, and walnuts) every day may be helpful in alleviating symptoms of dry eye.
- Avoid air blowing into the eyes by not directing car heaters, hair dryers, fans or air conditioners towards them.
- Wear wraparound sunglasses outdoors, to reduce exposure to the sun and drying winds.
- Avoid becoming dehydrated by drinking plenty of water each day.
- Remember to take eye breaks during long tasks.
- Position the computer screen below eye level.
- Avoid areas where there is smoke; smokers are advised to quit smoking.

## Conclusion

There are effective treatment options for people suffering from dry eyes. In many cases, routine use of artificial tears and minor behavioural modifications may reduce mild or occasional dry eye symptoms. However, patients that don't respond to artificial tears alone will need to take additional steps to treat dry eye symptoms. In severe cases, the optometrist may recommend prescription eye medications and in-office procedures to help the body create and secrete more tears and to decrease eye irritation and inflammation.

## References

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