

# Dry eyes demystified

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## Introduction

Patients experiencing ocular discomfort and/or visual impairment may very well be suffering from dry eye disease. Complications of untreated dry eye may include eye infections, damage to the surface of the eye and difficulty in performing day-to-day tasks. There are many factors that can lead to the development of dry eye disease. These factors, the resulting symptoms, and the recommended management will be discussed in this article.

## What causes dry eye disease?

Basal tears produced by the lacrimal glands are spread over the eye surface with each blink, and offer the eye a protective layer as well as lubrication.

This basal tear film contains a combination of fatty oils (lipids), water, and mucus. A healthy basal tear film covering the eye depends on the correct consistency of tears, the correct amount of basal tears, as well as proper functioning of the eyelids.

Dry eye disease can therefore occur due to two main factors:

- An increase in basal tear evaporation
- A decrease in basal tear production

## Most common causes of increased basal tear evaporation

- Dysfunction of the meibomian gland (the glands situated on the eyelids which are responsible for the lipid (fatty) composition of the basal tears).
- Low blink rate (may be due to increased staring at a computer screen).
- Medicated eye drops/ointments or eye drops/ointments containing preservatives.

- Contact lens wear.
- Allergies causing ocular symptoms.
- Windy, smoky, or dry environments. Travelling in aeroplanes, living in high altitude or desert areas, working in an air-conditioned environment and the cold, dry winter months, all contribute to basal tear evaporation and dry eyes.

## Most common causes of decreased basal tear production

- Dysfunction of the lacrimal glands (tear glands).
- Medication use, such as antihistamines, decongestants, menopause hormone therapy, and high blood pressure medications (to name but a few).
- Aging (risk of dry eye increases with increasing age).
- Diseases, such as diabetes, rheumatoid arthritis, Sjörgen's syndrome (an autoimmune disease), vitamin A deficiency and thyroid dysfunction.

The incidence of dry eye is found to be more common in women compared to men and is also more prevalent in the elderly.

## What are the symptoms of dry eye?

Patients with dry eye most frequently present with the following symptoms:

- A scratchy, burning sensation in the eyes, or a feeling as though there is something in the eyes
- Red eyes
- Watery eyes (as a result of the dry eye irritation)
- A discharge of the eyes
- Blurry vision or eye fatigue
- Difficulty wearing contact lenses
- Light sensitivity

## How is dry eye managed?

Identifying dry eye in a pharmacy setting is usually possible by evaluating the symptoms. Symptoms may be managed through making certain lifestyle changes and/or the use of artificial tears and ocular lubricants to relieve dry eye discomfort.

## Lifestyle changes

Certain questions may be asked of the patient in order to determine whether the cause of the dry eyes may be lifestyle-related. Based on the answers, certain recommendations may be made in order to improve symptoms, including referral to an eyecare professional or healthcare professional, if necessary.

*Have you been using any topical treatments to improve your symptoms?*

Review the history of topical treatments being used and refer to pharmacist or eyecare professional to make any changes if necessary.

*Do you concentrate for long periods in front of a screen, such as a computer or television?*

Encourage patient to rest eyes periodically and to try and blink more frequently.

*Do any of the topical lubricant eye medications currently being used contain preservatives?*

Recommend that the patient switches to a preservative-free option.

## Artificial tears and ocular lubricants

Many products are available over-the-counter (OTC) offering relief from dry eye symptoms. These products usually form the foundation of dry eye management.

Available products may contain the following, or combination of the following:

- **Demulcents** (lubricants):
  - Cellulose derivatives* (e.g. hydroxypropyl methylcellulose, carboxymethylcellulose sodium, hydroxyethyl cellulose)
  - Dextran 70*
  - Gelatin*
  - Liquid polyols* (e.g. glycerine, polyethylene glycol, polysorbate 80, propylene glycol)
  - Polyvinyl alcohol*
  - Povidone*
  - Carbomer*
- **Emollients** (moisturisers):
  - Lanolin preparations*
  - Oleaginous ingredients* (e.g. mineral oil, paraffin, petrolatum)

Some OTC products may also contain hyaluronic acid, which has been shown to improve tear stability, retain the tears for longer on the surface of the eye and improve dry eye symptoms.

Choice of product may depend on individual symptoms.

Symptoms	Treatment choices
Mild to moderate symptoms	Artificial tears <ul style="list-style-type: none"> <li>• Start with a less viscous (less thick) product, e.g. those containing cellulose derivatives. These products may require more frequent application.</li> <li>• More viscous products, e.g. those containing polyvinyl alcohol, may require less frequent use.</li> </ul>
Severe symptoms	Artificial tears <ul style="list-style-type: none"> <li>• Preservative-free options may be a better choice, especially for patients using multiple drops on a daily basis, or those who are also using other eye drops for other conditions.</li> </ul> Ocular emollient <ul style="list-style-type: none"> <li>• Ocular lubricant ointment/gel to use at night. These products may blur vision temporarily.</li> </ul>

## When to refer?

- The cause of the dry eye symptoms is uncertain
- The patient is not getting any relief of symptoms from tear supplementation or lifestyle changes
- Any moderate to severe pain in the eyes, light sensitivity, or visual loss

## Conclusion

Dry eye is a common condition, caused by many different factors. Anyone can be affected, but it is found to be more common in women and the elderly. There are many OTC options available for the relief of dry-eye symptoms. Patients should be counselled that dry eye is often a chronic condition and artificial tears may have to be used indefinitely. Preservative-free options should be considered for those patients using eye drops frequently, or who have severe symptoms. Refer all patients to a healthcare professional if the patient is experiencing eye pain, visual loss, or is not responding to OTC therapy.

## Bibliography

1. Shtein R. Dry eyes. In UpToDate ©2018. [updated 2 May 2018; cited 14 May 2018].
2. National Eye Institute. Facts about dry eye. [updated July 2017; cited May 2018]. Available from: <https://nei.nih.gov/health/dryeye/dryeye>
3. Foster CS. Dry eye disease (Keratoconjunctivitis Sicca). Medscape. [updated 9 Oct 2017; cited 14 May 2018]. Available from : <https://emedicine.medscape.com/article/1210417-overview>
4. Mayo Clinic. Dry eyes overview 24 July 2015. Available from: <https://www.mayoclinic.org/diseases-conditions/dry-eyes/symptoms-causes/syc-20371863>
5. Drug and Therapeutics Bulletin. The management of dry eye. Cincinal Review. BMJ 2016;353:i2333 doi: 10.1136/bmj.i2333 (Published 4 May 2016).
6. Pucker A, Ng S, Nichols J. Over the counter (OTC) artificial tear drops for dry eye syndrome. Cochrane Database Syst Rev.; 2: CD009729. doi:10.1002/14651858.CD009729.pub2.
7. Abelson M, Ousler G, Smith L, Santanam U. Bring them to tears with your treatment. Review of Ophthalmology. 5 Nov 2015. Available from: <https://www.reviewofophthalmology.com/article/bring-them-to-tears-with-your-treatment>