

A GP guide to treating dry eye disease

The surge in digital devices has resulted in increasing prevalence of this condition, including a

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By Dr Alison Chiu

Dry eye disease is common, with prevalence estimated between 4.6% and 46%.^{1,2}

The condition, also known as keratoconjunctivitis sicca, is more common in women.

The incidence of dry eye increases with age.² However, the surge in digital device use among younger populations.

Many patients are asymptomatic. Treatment may prove difficult in such patients as it



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Asymptomatic dry eye warrants aggressive treatment particularly in patients underg

Untreated dry eye is associated with decreased patient satisfaction and accuracy of s

Symptomatic dry eye disease, when severe, can be debilitating and have significant i

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Pathogenesis

Dry eye disease is predominantly an inflammatory disorder.

The presumed pathogenesis includes increased osmolarity of the tear film, and infla

Specifically, T cell-mediated inflammation leads to release of chemokines, which are

The components of the tear film are a watery layer containing proteins and electrolyt
by conjunctival goblet cells.

Clinically, dry eye disease is classified into two sub-types, which guide management with increased tear evaporation.⁸

Clinical features

Symptoms of dry eye can include the eyes feeling dry, gritty, watery, painful, stinging

Vision can be blurred, of poor quality and may fluctuate.

Itchiness is usually a feature of allergic conjunctivitis, which can exist independently

Gauging symptoms of dry eye is important for the GP, as there is limited scope for pharmacological treatment

There are a variety of validated questionnaires.

The author utilises the Ocular Surface Disease Index (OSDI - see Online resources) for assessment of dry eye severity, and is used pre-operatively for cataract surgery.

This tool gathers baseline data on symptoms and severity, and can be utilised to monitor response to treatment.

Systemic associations

Dry eye predominantly occurs in the absence of systemic disease.

However, there are a number of potential systemic associations that warrant consideration.

Autoimmune disorders associated with dry eye include primary Sjogren's syndrome, dermatomyositis, and primary biliary cirrhosis), graft versus host disease, and immunodeficiency.

Infiltrative processes, such as lymphoma, amyloidosis, haemochromatosis and sarcoidosis.

Dry eye may also be a manifestation of neuropathic dysfunction such as multiple sclerosis, and androgen deficiency.

Contributing medications

Medications can also contribute to dry eye. The most common categories are listed in Box 1.

Box 1. Medications commonly associated with dry eye

- Antihypertensives (eg, beta blockers, diuretics)
- Antihistamines and decongestants
- Anticholinergics
- Antidepressants (eg, setraline, paroxetine, tricyclics)
- Antipsychotics (eg, phenothiazines)
- HRT
- Gastrointestinal medications (eg, proton pump inhibitors and H2 receptor antagonists)
- Acne medications (eg, isotretinoin)
- Chemotherapy agents (eg, cyclophosphamide)

Environmental factors

These are often overlooked as contributors to dry eye symptoms. Heating and air-conditioning can contribute to dry eye symptoms. Placing bowls of water in the room can help ease symptoms. Airplane travel is an especially common trigger. Activities that reduce blink rate — such as close, concentrated work and screen use — can also contribute. Awareness of the need to consistently maintain adequate blink rate can be useful. Inadequate oral hydration and alcohol consumption can also have an adverse impact on tear production.

Ocular factors

Specific ocular factors that can contribute to dry eye include contact lens use, frequent use of eye makeup, and use of eye drops. Contact lenses interfere with the normal composition of the tear film.⁹

Preservatives in eye drops, including artificial tear solutions marketed to patients with dry eye

Advise patients with moderate to severe dry eye or using artificial tear lubricating drops to avoid eye drops containing preservatives. This applies not only to lubricating drops, gels and ointments, but also to preparations containing corticosteroids. In addition, topical steroid and bacteriostatic antibiotics are also available in minimally preservative formulations. Eyelid abnormalities, most commonly ectropion, disrupt the normal flow of the tear film. Eyeliner use along the eyelid margin where the meibomian gland orifices lie, can cause obstruction of the gland orifices.



Examination findings in primary care

Examining for signs of dry eye requires magnification, usually achieved using a slit lamp.

A useful preliminary assessment tool in primary care is whether pain disappears with

In the absence of other eye pathology, pain that disappears with local installation indicates

This finding also excludes intraocular causes of eye pain such as iritis and rare causes of

This simple technique can be especially useful when the symptoms are longstanding.

Management

Treatment of dry eye is tailored to the individual and determined by the severity of disease.

Dry eye disease is a chronic condition and requires long-term treatment.

Patient education regarding the condition, prognosis and treatment is important, to

Discuss modification of environmental contributors, and identify and modify or eliminate

In addition, treatments for mild disease generally include as their mainstay the use of

Administering lubricating preservative free gels and ointments at night can be helpful.

These formulations are more viscous and last longer, lubricating the eye during sleep.

Ointments offer the most intensive lubrication and are particularly thick.

These warrant application just before sleep, as vision will be blurred.

Advise patients to administer about 1.0-1.5 cm to the inferior fornix.

Treatments targeted to the meibomian glands aim to address deficiencies in the tear

Around 20-30 meibomian glands lie in a vertical direction in the upper and the lower

Oral supplementation with fish oil and/or flaxseed oil is recommended.

Earn CPD points:

- **How to Treat — The red eye**
- **How to Treat — Eyelid and lacrimal disorders**

The two main components of interest are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Flaxseed oil contains alpha-linolenic acid (ALA), which is converted to EPA and DHA, in the body.

Therefore fish-based omega 3s (which contain both EPA and DHA) are preferable over plant-based sources.

Hot compress and massage to the eyelids, performed at home, is designed to increase meibomian gland function.

The author prescribes 30 seconds of hot compress and one minute of massage in a vertical direction.

If these measures are inadequate, tear conservation with punctal occlusion — using eye drops — is used.

Because of the inflammatory nature of dry eye disease, punctal occlusion is used in combination with other treatments (e.g., eye drops).

This ensures that the tear film, which is retained for longer thanks to punctal occlusion, can do its job.

The finding of punctate epitheliopathy on examination signals a significant inflammatory component.

Moisture chamber spectacles/goggles can also be considered, but have low patient utilization.

If there are features of anterior blepharitis — dandruff-like changes of the eyelids — eyelid hygiene is recommended.

These may include eyelid scrubs with bicarbonate soda, mild shampoo, or tea-tree oil (if tolerated).

In targeting the inflammatory cascade, prescription antibiotics, such as doxycycline or minocycline, are used.

These exert their effects by inhibiting TGF-1-induced MMP-9 production.¹²

Doxycycline requires a longer duration of treatment, and has greater systemic side effects than minocycline.

It is also a contraindication for intense-pulsed light (IPL) therapy, discussed below.

When these measures are inadequate, the treatment algorithm progresses to office-based treatments.

Office-based treatments are targeted to meibomian gland dysfunction, and simulate the natural function of the glands.

These involve the doctor or other clinician (for example, an optometrist) performing thermal or mechanical treatments.

IPL therapy is a promising treatment that targets meibomian gland dysfunction and is also used for conjunctivitis.

Treatments consist of monthly treatments for the initial three months, then individualized treatments thereafter.

Long-term use of corticosteroids, including topical formulations, is associated with a risk of cataracts and glaucoma, and require close monitoring.

Patients who are dependent on topical steroids or more potent oral steroids (such as prednisone) should be tapered off gradually, and may require a low-dose oral steroid (such as prednisone) for a short period of time.

This is a topical non-glucocorticoid immunomodulatory drug, that works via a reduction in inflammation.

This treatment is TGA approved under the Special Access Scheme.

The disadvantage of topical cyclosporin is that it has a long onset of action and causes irritation.

Read more:

- **[Case Report — Chronic eye irritation associated with a serious sleep disorder](#)**
 - **[Case Report — Beware the warning signs of 'typical' viral conjunctivitis](#)**
-

Lifitegrast, a topical lymphocyte function-associated antigen intercellular adhesion molecule-1 inhibitor, is used to increase the armamentarium of available treatment modalities.

It targets the binding that facilitates T- cell proliferation/activation and cytokine release.

Autologous serum and plasma-rich growth factor eye drops are formulated from the
The biochemical and nutritional components of these drops mimic natural tears mo
They are expensive, however, costing around \$1200 for a three-month supply.
In comparison, the Australian Blood Bank will supply 12 months of fully subsidised a
However plasma-rich growth factor drops are advantageous in that they are associat
With both formulations the logistics of use can be a barrier to some patients. Both ar
While therapy is associated with symptom relief, long-term outcomes after the cessat

Conclusion

Dry eye disease is increasingly common, and treatment of mild disease is fairly straig
Do not overlook environmental and other contributory factors, as addressing these c
There is also a great deal that can be done beyond the basic foundation treatments f

Resource:

- [Ocular Surface Disease Index](#)

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- [Contact us for references](#)

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