

## Dry Eye (keratoconjunctivitis sicca) – Prescribing Guidelines

Dry eye syndrome, or dry eye disease, is a common condition associated with a broad spectrum of ocular symptoms, including burning, itching, redness, mucoid discharge, excessive “tearing” or watering (secondary to reflex secretion), pain and ocular fatigue. Symptoms may worsen as the day progresses.

There are many putative risk factors for dry eye but increasing age and female sex have a very noticeable association with dry eyes. Prevalence in the >65yrs is reported as between 15-33% and increases with age.

The aetiologies which may be associated with dry eye disease include:

Allergic disease	Glaucoma
Blepharitis	Meibomian gland dysfunction (MGD)
Contact lenses	Laser-assisted in situ keratomileusis
Conjunctivochalasis	Primary Sjogren’s syndrome
Eyelid closure	Systemic disease, e.g. thyroid eye disease, rheumatoid arthritis and diabetes
Systemic medications, e.g. hormone and hormonal antagonist treatments, drugs with anticholinergic side-effects (tricyclic antidepressants, antihistamines, diphenoxylate/atropine and antimuscarinic medications), treatments for acne (such as isotretinoin), diuretics, cardiac antiarrhythmic drugs, beta-adrenergic antagonists and chemotherapy agents. N.B. ectropions can be managed with dry eye treatments, use viscous products.	

### Considerations for prescribing ocular lubricants

#### Introduction

- Diagnosis of MGD should be based on clinical history – patients are likely to have red eyelid margins with no crusting. The eye is likely to water and potentially sting. In pressing the eyelid there may be secretion from the gland. Since MGD tends not to respond to dry eye products or lid hygiene referral may be necessary, eye compresses may be helpful. Systane balance may be of benefit as the licenced product for MGD (see below).
- Patients with blepharitis are likely to experience crusting of the eyelids. Lid hygiene techniques can be helpful (see below).
- Prognosis depends on underlying causes but generally most patients with dry eyes only have discomfort without loss of vision but rarely corneal ulcers can develop.
- Consider precipitating (above) or environmental factors before prescribing. Long sessions of reading, TV watching and computer use reduce blink rate and exacerbate the problem.
- Where possible adjustable measures should be taken such as eyelid hygiene and reducing screen time before resorting to ocular lubricants.

### Prescribing

- The majority of prescribing of ocular lubricants should be generic. Prescribing by brand should only occur where there are compliance issues or documented evidence of allergy to particular excipients or preservatives.
- Each type of eye drop should be prescribed for 4-6 weeks before a different type is prescribed.
- Patients should be asked what products (if any) they have already tried and for how long so that suitable alternatives can be tried next.
- If a patient needs to use a product **more frequently than 3 times daily**, a more **viscous** lubricating eye drop should be prescribed, see table below.
- If a patient has tried 3 different types of eye lubricants options and continues to have symptoms of dry eye the patient should be considered for referral.
- Some patients may develop sensitivities to preservatives and if confirmed, the name must be documented so that any future products used do not contain this preservative. Preservative-free preparations should only be considered where;
  - the patient has a documented allergy or evidence of epithelial toxicity to the preservatives in a preparation
  - the patient needs to use eye drops more often than every 2 hours and the next line lubricating choices are not appropriate
  - Immediately following eye surgery, until healing is confirmed
  - Patients wear soft contact lenses
  - If the patient has ocular surface disease
  - If there is ocular surface inflammation
  - If there is a requirement to administer eye drops more than 6 times a day
  - If the patient experiences problems with tolerating the prescribed eye drops
  - If there is evidence of toxicity – demonstrated by persistent red eyes

### Practical notes

- Single use Unit Dose Vials (UDVs) should be discarded after each use unless otherwise stated by the manufacturer.
- 10ml of eye drops normally contains approximately 200 drops (~20 drops in 1ml)
- Eye ointments are used for local treatment of lids, for prolonged treatment at night and to reduce the number of drops given.
- If drops and ointment are used at the same time, drops should be given first.
- Paraffin based ointments are flammable and care should be taken to avoid burns, e.g. smoking, close contact with naked flames etc.
- A number of products are available for purchase at less than the cost of an NHS prescription.
- Some eye drops are licensed as medical devices, do not contain preservatives and have 6 month expiry dates once opened. This may need explaining to patients to avoid wastage.

**When to refer to Secondary Care**

- Significant pain / soreness on waking with recent history of injury
- Waking in the middle of the night with eye pain
- Unable to open eye after normal night sleep
- Uncontrolled symptoms after 6 months
- Underlying systemic condition needing specialist management
- Deterioration of vision
- Signs of ulcers or corneal damage
- After unsuccessful treatment attempts with 3 products

Prior to prescribing consider: Are the eyes dry due to aqueous deficiency or excessive evaporation?			
Features of aqueous deficiency			Features of evaporative deficiency
<ul style="list-style-type: none"> <li>• Unable to produce tears when crying</li> <li>• Sore eyes on waking without a history of recent eye surgery</li> <li>• Pain</li> </ul>			<ul style="list-style-type: none"> <li>• Excessive watering on a windy day</li> <li>• Blepharitis or ocular rosacea</li> </ul>
Aqueous Deficiency			Evaporative Deficiency
Severity	First line (low viscosity)	Second line (medium viscosity)	
Mild - Moderate Up to 6 drops per day	<p>Hypromellose 0.3% (preservative or preservative free (prescribe as Evolve, Hypromol®, Xailin®)</p> <p>Carbomer 980 gel (preservative or preservative free)</p>	<p>Sodium hyaluronate 0.1% or 0.15% (preservative free )</p> <p>Carmellose sodium 0.5% (preservative free)</p>	<p>Propylene glycol and polyethylene glycol drops with hydroxypropyl guar (prescribe as Systane®)</p> <p>Propylene glycol with hydroxypropyl guar drops (prescribe as Systane Balance®, licensed for MGD)</p>
Severe >6 drops per day; corneal disturbance; Schirmer's <3 mm;	<p>Sodium hyaluronate 0.2% (preservative free,)</p> <p>Sodium hyaluronate 0.4% (preservative free)</p>	Acetylcysteine 5% (preserved)	Lid hygiene (see alternative treatments on page 5)
At night for both aqueous and evaporative deficiency			
Bed time: Carbomer 980 gel (preservative or preservative free) or Liquid paraffin eye ointments (prescribe as VitA-POS®, Xailin® or HydraMed®)			
Following secondary care referral	<p>Treatment options would include:</p> <ul style="list-style-type: none"> <li>• Acetylcysteine eye drops (only if filamentary keratitis present)</li> <li>• Ciclosporin (Ikervis®) to be initiated by ophthalmologist or healthcare professional qualified in ophthalmology in accordance with NICE TA 369, further details below.</li> <li>• Punctal plugs</li> <li>• Oral doxycycline (3-6 months treatment for severe blepharitis may be required)</li> <li>• Autologous serum eye drops ( not routinely commissioned)</li> </ul>		

**Ciclosporin for treating dry eye disease that has not improved despite treatment with artificial tears, NICE TA 369**

NICE TA 369 states: Ciclosporin is recommended as an option, within its marketing authorisation, for treating severe keratitis in adult patients with dry eye disease that has not improved despite treatment with tear substitutes.

Ciclosporin (Ikervis, Santen Pharmaceutical) is a sterile, positively charged, oil-in water, unpreserved ophthalmic emulsion that contains ciclosporin (CsA). Ciclosporin comes as 30 x 0.3ml UDVs . Its formulation contains an excipient, cetalkonium chloride, which acts as a cationic agent and is specifically designed to prolong the time each eye drop stays on the epithelial layer of the eye. Ciclosporin has an anti-inflammatory effect on the cornea and the lacrimal (tear) gland. Following administration, ciclosporin blocks the expression of pro-inflammatory cytokines and subsequently enters corneal and conjunctival infiltrated T-cells, activating them. It has a marketing authorisation in the UK for treating 'severe keratitis in adult patients with dry eye disease, which has not improved despite treatment with tear substitutes'. Ciclosporin is administered as an eye drop of 1 mg/ml once daily at bed time.

The most common adverse reactions with ciclosporin are eye pain, eye irritation, lacrimation, ocular hyperaemia and eyelid erythema. For full details of adverse reactions and contraindications, see the summary of product characteristics. To minimise stinging it should be instilled after putting in lubricating eye drops.

Ikervis® has an “amber” traffic light categorisation on the formulary in use according to NICE TA 369. The initial prescription for ciclosporin will be supplied by the secondary care team, further prescriptions to be supplied by the GP. The secondary care team will review for effectiveness at 3 months with further reviews as required at 6-12 months (maximum effect may not be evident for 6 months). Not all patients require long term use and consultants will advise GPs when to discontinue therapy. No additional monitoring by GPs is required.

**Alternative Treatments**

<p><b>Eye Hygiene</b></p>	<p>The NHS Choices page provides useful information on the treatment of blepharitis including eyelid hygiene <a href="http://www.nhs.uk/Conditions/Blepharitis/Pages/Treatment.aspx">http://www.nhs.uk/Conditions/Blepharitis/Pages/Treatment.aspx</a></p> <p>Commercially available products are available to buy, or for a home-made solution, fill a bowl with one pint of boiled water and allow it to cool to a warm temperature. Add a teaspoon of bicarbonate of soda.</p> <p>The cleaning solution should be used as follows:</p> <ul style="list-style-type: none"><li>• soak some clean cotton wool in the solution and remove crustiness from around the eyelids, paying special attention to the eyelashes</li><li>• repeat this process if necessary using a clean piece of cotton wool</li><li>• dip a clean cotton bud into the solution and gently clean the edges of the eyelids by wiping the cotton bud along the bases and lengths of the lashes</li><li>• repeat this process morning and night until resolved then move to three times weekly</li><li>• solution should be used once and then discarded.</li></ul>
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<b>Eye Compress</b>	<p>The NHS Choices page provides useful information on eye compresses <a href="http://www.nhs.uk/Conditions/Blepharitis/Pages/Treatment.aspx">http://www.nhs.uk/Conditions/Blepharitis/Pages/Treatment.aspx</a></p> <p>Commercially available products are available to buy, or for a home-made warm compress:</p> <ul style="list-style-type: none"><li>• boil water and leave it to cool to a warm temperature</li><li>• soak a clean flannel or eye pad in the warm water and gently place this over the eyes for around 10 minutes</li><li>• reheat the compress periodically by soaking it in warm water, ensuring the flannel doesn't become cold</li></ul> <p>Some people find compression with a special microwavable eyebag useful for dry eye syndrome. If you use one of these products, make sure you clean the bag before and after use.</p>
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### Eye Drop Dispensers

For people having difficulty instilling their eye drops either due to bottle size, design or because of dexterity issues there are four types of aids available via FP10.

**1. ComplEye.**

This aid seems particularly suited to larger bottles such as the Hylo range and there is a YouTube video demonstrating its use

(<https://www.youtube.com/watch?v=nBowtPOgdqo> ). Drug tariff price is £2.00 (Dec 2016)

**2. Opticare.**

This aid can be used for any sized bottle, from 2.5 to 15ml and comes with a collar adaptor for the small or unusually shaped containers. This product is also available in different colours for those patients who need an aid for multiple eye drops.

A demonstration video can be found at <http://www.cameron-graham.co.uk/pages/opticare-demonstration-video.php>. Drug tariff price is £4.92 (Dec 2016)

**3. Opticare Arthro 5 (Blue)**

This aid is used with 2.5 & 5ml bottles for those patients who have dexterity problems. Drug tariff price is £4.92 (Dec 2016).

**Opticare Arthro 10 (Cream)**

This aid is used with 10 & 15 ml bottles for those patients who have dexterity problems. Drug tariff price is £4.92 (Dec 2016).

There is a demonstration video for the use of the Opticare Arthro aids at <http://www.cameron-graham.co.uk/pages/opticare-arthro-demonstration-video.php>

Under the Equality Act any provider of services may need to make a 'reasonable adjustment' if this is necessary for the person to overcome the disability in such a way as to be able to use the provided services. Pharmacists and dispensing practices should be aware that there may be instances where they have to supply an eye drop dispenser free of charge

Self-care advice for patients available at: <http://www.nhs.uk/Conditions/Dry-eye-syndrome/Pages/Prevention.aspx>

## References

1. British National Formulary BNF70 September 2015