Pan-London Dry Eye Guide

Disclaimer:

This is a pan-London Dry Eye guide recommending suitable eye lubricant classes for different stages of Dry Eye Disease (DED). This document is for clinical guidance only and must be interpreted, adapted and ratified locally in line with governance arrangements of the individual ICB. The guide is intended for all care settings.

Clinicians are advised to refer to the manufacturer's current prescribing information and local formularies before treating individual patients.

The purpose of this guide is not to advocate use of specific brands. The latter remains the business of the locality where the guide is ratified for use. To ease transfers of care, this guide advocates prescriptions originating from hospitals to maintain generic prescribing of eye lubricants. This is to allow the most cost effective brand to be supplied thereafter in primary care, according to current contracts and pricing agreements.

The authors accept no liability for use of this information beyond its intended use.

While we have tried to compile accurate information in this guide, if you identify information that is inaccurate, please report this to the London Formulary & Medicines Group (LFMG) via MOPP@gstt.nhs.uk.

Issue	Author(s)	Owner	Circulation/ Approval	Comments
V1.0	Ophthalmology SLWG sub-group: Tanya Serebryanska, Prof John Dart, Valerie Saw, Jill Bloom, Stuart Semple, Vijay Shanmuganathan, Nimrata Gujral	NHS LPP MOPP	06.12.2021	Circulated for comments within the SLWG sub-group.
V2.0	Ophthalmology SLWG sub-group	NHS LPP MOPP	16.12.2021	Wider circulation for comments.
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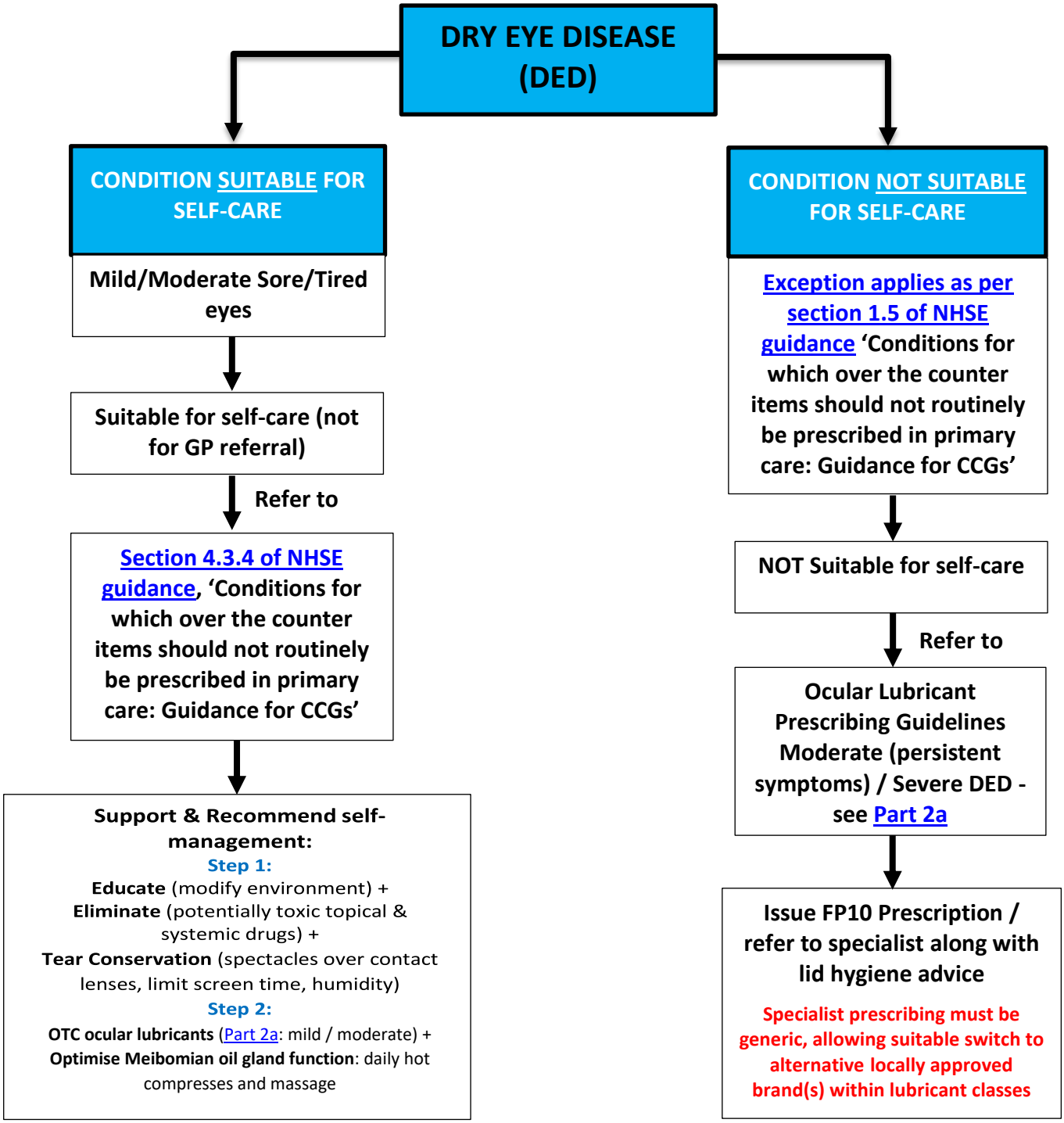
V4.1	Ophthalmology SLWG sub-group	NHS LPP MOPP	02.03.2022	Amended post final call for comments and discussion at the pan-London ophthalmology SLWG.
V4.2			07.07.2022	Approved as a suitable reference guide to complement the ophthalmology pan-London formulary work carried out by the Ophthalmology SLWG.

Part 1 - Treatment Pathways for Adult and Paediatric Patients Presenting with Dry Eye



See Part 3- Contains excerpts from the NHSE document. Examples with relevance to Dry Eye conditions have been provided within: 'Conditions for which over the counter items should not routinely be prescribed in primary care: Guidance for Clinical Commissioning Groups (CCGs)' – found in full at:

https://www.england.nhs.uk/wp-content/uploads/2018/03/otc-guidance-for-ccgs.pdf

See Part 4 - Recommendations on the staged management and treatment of DED.

Part 2a - pan-London Recommendations for Prescribing of Ocular Lubricants based on severity of DED

See Part 1 flowchart - suitability for self-care vs. condition not for self-care

PF▪= preservative free

MILD DRY EYE self-care

Recommend a choice of low viscosity, non-combination products, for PRN use.

1) Cellulose
e.g. **Hypromellose 0.3%** preserved/**PF▪**

2) Polysaccharides
e.g. **Carmellose 0.5%** preserved/**PF▪**

3) Carbomers
e.g. **Carbomer 980 0.2% eye gel** preserved/**PF▪**

MODERATE DRY EYE self-care

Recommend a choice of higher viscosity lubricants and/or paraffin based ointment. With persistent symptoms(2b) refer to specialist.

1) Polysaccharides
e.g. **Carmellose** 1% PF▪ **or** **Sodium Hyaluronate** ~ 0.1% PF▪

2) Carbomers
e.g. **Carbomer 980 0.2% eye gel** preserved/**PF▪**

3) Eye ointment paraffin⁺ based lubricant PF▪

SEVERE DRY EYE not for self-care

Chronically inflamed eyes; Specialist initiation of regime required. Choice of high viscosity products including combination eye drops.

1) Sodium Hyaluronate ~ 0.2% PF▪

2) Combination products
e.g. Osmoprotectant; Mucolytic; Lipid containing supplementation

3) Eye ointment paraffin⁺ based lubricant PF▪

Lubricant classes – explanatory notes

- **Viscosity enhancing agents:** Increased viscosity products (higher strength) would have a more reparative effect on the ocular surface, stimulating epithelial migration.
- **Osmoprotectant agents:** Additional solutes with an osmoprotectant effect; small number of studies show a beneficial effect when used for neurotrophic keratitis or DED resulting from slow healing after invasive procedure(s) / trauma.
- **Mucolytic agents:** For treatment of corneal filaments and patients with "sticky" eyes due to excess mucous.
- **Antioxidants agents:** Reduce reactive oxygen species on the ocular surface.
- **Lipid containing supplementation:** Oil emulsions containing mineral oils. Some evidence of benefit in Meibomian Gland Dysfunction (MGD) / evaporative DED.
- **Paraffin based eye ointments:** Lubricate the eye surface, especially in cases of recurrent corneal epithelial erosion. ⁺A small % of patients may be allergic to the lanolin content, use a lanolin-free preparations in these instances.

Examples of eye lubricants within the classes

*Examples of eye products in this section are limited and for purposes of identification only. These are **not endorsements of specific brands** or indicate ability to prescribe these products in individual trusts or primary care. For full list of prescribable products consult your local formularies and/or see* NHS Electronic Drug Tariff Part IXa.

- **Viscosity enhancing agents:** carbomers; hydroxypropyl methylcellulose e.g. hypromellose; polysaccharides e.g. hyaluronic acid and carmellose. Class also includes polyvinyl alcohol, hydroxypropyl-guar and polyethylene glycol (PEG).
- **Osmoprotectant agents:** L-carnitine; betaine; glycerol; dextran; sodium Hyaluronate ~ 0.15% with trehalose e.g. Thealoz® Duo range; Optive Fusion® and Systane® ranges.
- **Mucolytic:** N-acetylcysteine (acetylcysteine 5% preserved eye drops (Ilube®))
- **Antioxidant agents:**, co-enzyme Q10, vitamin E & A, quercetin e.g. VIZhyal®, VisuXL® ranges.
- **Lipid supplementation:** Cationorm®; phospholipids +/- oils (various) e.g. VisuEvo®, Emustil®, Systane® range.
- **Paraffin based eye ointments:** may include wool fat, liquid and white soft paraffin, lanolin, retinol palmitate e.g. HyloNight®, Xialin Night®, Hydramed Night®. Lanolin free white soft paraffin eye ointment⁺ for those allergic to lanolin e.g. Soothe Nighttime®, Hydramed Night Sensitive®.

Part 2b - supplementary information on prescribing and products for specialist initiation when symptoms are persistent/severe

RESTRICTED

See pan-London eye formulary for RAG rating explanations (RED / AMBER / GREEN): www.londonformulary.nhs.uk

Ciclosporin: eye drops 0.1% [TA369] (licensed products: **Ikervis®- adults; Verkazia®- children/adolescents) / Optimmune 0.2% eye ointment** (unlicensed) and **Restasis® 0.05% ophthalmic emulsion** (unlicensed)**.**

Local preference for the unlicensed ciclosporin preparation may vary.

Acetylcysteine 5% PF & Acetylcysteine 10% PF eye drops (both unlicensed)

Autologous serum eye drops (ASE)** only to be initiated and continued by a specialist in ophthalmology

** NHSE commissioning statement: serum eye drops for the treatment of severe ocular surface disease (all ages)

Preservative-free preparations in this document refer to those with no antimicrobial preservatives. Eye drops preserved with benzalkonium chloride (BAK) have shown to cause preservative-induced complications. Alternative preservatives, including others from the quaternary ammonium class (e.g. cetrimide) and oxidative preservatives (e.g. stabilised oxychloro complex) may need to be avoided. Clinicians must also be aware that some additives may cause allergic reactions too. *See Appendix 1 for more details.*

PRESERVATIVE FREE formulations should **ALWAYS be prescribed** for patients with:

- True preservative allergy, and / or
- Evidence of epithelial toxicity from preservatives

PRESERVATIVE FREE formulations should be **CONSIDERED** for patients with:

- Soft/Hybrid/Rigid gas permeable contact lenses wearers, or
- Conditions requiring multiple preserved topical medications, or
- Frequency > 4 times daily in moderate (persistent symptoms)/severe dry eye

Counselling considerations and patient information signposting / leaflets:

- Dry Eyes:
  - NHS conditions: dry eyes
  - RNIB - Understanding Dry Eye
  - NICE CKS: Dry Eye Syndrome
  - Lubricants / artificial tears advice for patients
- Blepharitis: NHS conditions: blepharitis
- Compliance aids: Know Your Drops resources

Part 3 - Excerpts from the document by NHS England: "Conditions for which over the counter items should not routinely be prescribed in primary care: Guidance for CCGs"

1.5 General exceptions that apply to the recommendation to self-care adopted to ophthalmology.
There are certain scenarios where patients should continue to have their treatments prescribed and these are outlined below:

- Patients prescribed an OTC treatment for a long term condition e.g. Sjogren's Syndrome or Stevens-Johnson Dry Eye where less viscous lubricants are preferred.
- For the treatment of more complex forms of minor illnesses e.g. intractable Meibomian Gland Dysfunction (MGD) despite adherence to daily hot compresses and eye specialist recommended lubricants > 4x/day.
- For those patients that have symptoms that suggest the condition is not minor e.g. ocular surface inflammation, corneal ulcer or corneal damage.
- Treatment for complex patients e.g. thyroid eye disease, poorly controlled diabetes with ocular complications such as diabetic retinopathy.
- Patients on prescription only treatments.
- Patients prescribed OTC products to treat an adverse effect or symptom of a more complex illness and/or prescription only medications and should continue to have these products prescribed on the NHS e.g. prescription medication for management of glaucoma (chronic condition).
- Circumstances where the product licence doesn't allow the product to be sold OTC to certain groups of patients. This may vary by medicine, but could include babies, children and/or women who are pregnant or breast-feeding. Community Pharmacists will be aware of what these are and can advise.
- Patients with a minor condition suitable for self-care that has not responded sufficiently to treatment with an OTC product e.g. severe recalcitrant blepharitis, despite adherence to daily hot compresses and eye specialist recommended lubricants > 4x/day.
- Patients where the clinician considers that the presenting symptom is due to a condition that would not be considered a minor condition e.g. suspected systemic conditions such as allergy and other chronic ocular surface diseases.
- Circumstances where the prescriber believes that in their clinical judgement, exceptional circumstances exist that warrant deviation from the recommendation to self-care e.g. epithelial defects.
- Individual patients where the clinician considers that their ability to self-manage is compromised as a consequence of medical, mental health or significant social vulnerability to the extent that their health and/or wellbeing could be adversely affected, if reliant on self-care. To note that being exempt from paying a prescription charge does not automatically warrant an exception to the guidance. Consideration should also be given to safeguarding issues.

4.3.4 Dry Eyes/Sore tired Eyes

Annual Spend	c. £14,800,000 (2017)
Rationale for recommendation	Dry eye syndrome, or dry eye disease, is a common condition that occurs when the eyes don't make enough tears, or the tears evaporate too quickly. Most cases of sore tired eyes resolve themselves. Patients should be encouraged to manage both dry eyes and sore eyes by implementing some self-care measures such as good eyelid hygiene and avoidance of environmental factors alongside treatment. Mild to moderate cases of dry eye syndrome or sore tired eyes can usually be treated using lubricant eye treatments that consist of a range of drops, gels and ointments that can be easily be purchased over the counter.
References	1. NHS Choices: Dry eye syndrome accessed October 2017 2. NICE CKS: Dry eye syndrome accessed October 2017
Recommendation	Advise CCGs that a prescription for treatment of dry or sore eyes should not routinely be offered in primary care as the condition is appropriate for self-care.
Exceptions	No routine exceptions have been identified. See earlier for general exceptions.

Part 4 - Recommendations for the staged management and treatment of DED:

Mild / Moderate / Sore /Tired eyes DED - management in community

- Management relies on **self-care**.
- Provide education regarding the condition, its management, treatment and prognosis.
- Modification of local environment e.g. avoid air-conditioning and/or humidify environment; avoid dusty or smoky environments.
- Identification and review of offending systemic and topical medications (discuss with pharmacist / GP before discontinuing).
- Various OTC ocular lubricants for self-care – see part 2a 'Mild Dry Eye'. Individual preferences apply when purchasing for self-care e.g. cost.
- Where MGD is suspected / present consider:
    - Providing patient with practical advice (MEH leaflet), and/or
    - Recommending OTC lipid-containing supplements
- Lid hygiene and warm compresses may be used for self-care (various available commercially).
- Where symptoms are persistent or no/poor response in 12-16 weeks, advise to discuss a secondary care referral with GP

Moderate DED with persistent symptoms - management in secondary care

- Switch to PF ocular lubricants to minimize preservative-induced toxicity.
- Try lubricants with a mucolytic and/or an osmoprotectant.
- Use a lubricant eye ointment at night.
- Make arrangements for follow up on initiating new treatment (4-8 weeks).
- Tear conservation with non-pharmacological interventions e.g. punctal occlusion with punctum plugs performed surgically if temporary plugs are effective but not tolerated or get infected.
- Topical antibiotic or antibiotic/steroid combination applied to the lid margins for anterior blepharitis (if present).
- Topical corticosteroid (usually for a short time only) whilst starting topical ciclosporin.
- Topical or oral macrolide / tetracycline antibiotics if MGD confirmed.
- Treatment relieving the symptoms and clinical signs continue until symptom free disease and tapper off on advice of secondary care.

Severe DED management in secondary care (management not inclusive of continuous prescribing)

- Topical lid hygiene with tea tree oil (various products such as eye lid wipes / gels) for confirmed Demodex mites – available to purchase for self-care.
- Using preparations listed in part 2b – effect may not become apparent for up to 12 weeks.
- Oral secretagogue (e.g. PO Pilocarpine).
- Autologous/allogeneic serum eye drops.
- Therapeutic contact lens options:
    - Soft bandage lenses (not in severe dry eye);
    - Rigid scleral lenses.

Last resort steps would include:

- Prolonged duration topical corticosteroid;
- Surgical punctal occlusion;
- Other surgical approaches (e.g. tarsorrhaphy, salivary gland transplantation).

- **Note for clinicians** - please be aware patients in this category may wish to seek other treatments only available **privately** e.g. physical heating and expression of the Meibomian glands using device-assisted therapies, such as LipiFlow (NICE MIB25). These **are not** currently considered cost effective for the NHS (RNIB resource).

Craig, J. P. *et al.* TFOS DEWS II Report Executive Summary. *Ocul Surf* **15**, 802-812, doi:10.1016/j.jtos.2017.08.003 (2017).
NICE CKS: Dry Eye Syndrome management

Appendix 1: Examples of preservatives contained in some ocular lubricants (list is not exhaustive).

Chemical Class	Compounds	Commercial name
Quaternary ammoniums	Benzalkonium Chloride (BAK)	
	Cetrimide	
	Polyquaternium-1	Polyquad®
Oxidative complexes ('Soft preservatives' or 'Vanishing preservatives')	Sodium Perborate $NaBO_3$	Gen Aqua®
	S.O.C (Stabilised Oxychloro Complex)	Purite® Ocupure®
	S.C.P (Stabilised Chlorite Peroxide)	Oxyd®
Mercury derivatives	Thiomersal or thimerosal	
	Phenylmercuric acetate nitrate	
Amidines	Chlorhexidine	
Alcohols	Chlorobutanol	
	Phenylethanol	
Parabens	Methylparaben	

Notes:

- Allergy to preservatives should be considered if a patient's condition worsens on treatment. Patients requiring PF eye drops must avoid all preservatives.
- The list of preservatives in the table is **not exhaustive** and is intended to give the reader/end-user an indication of what preservatives may be encountered in practice and eliminated if an allergy occurs.
- Additives, buffers or electrolytes are not discussed here.
- The **table is not intended for use as a desensitisation hierarchy** and must not be treated as such.

Sources

Walsh K, Jones L. The use of preservatives in dry eye drops. Clin Ophthalmol. 2019 Aug 1;13:1409-1425.

Baudouin C, Labbé A, Liang H, Pauly A, Brignole-Baudouin F. Preservatives in eye drops: The Good, the Bad and the Ugly. Progress in Retinal and Eye Research 29.4 (2010): 312-34.