

# Dry Eye Disease (DED)

## Important information for patients

### What is DED?

The eyes continually produce tears that form a tear film which lines the ocular surface and help keep the eyes comfortable and the vision clear. The tear film is a complex layer which contains an outer oily layer, an inner mucous-like layer, a middle watery layer and many other important components. DED is a common condition characterised by insufficient tear film and irritation of the ocular surface. There are many different causes and types of DED. It is associated with ageing (especially after the menopause), infrequent blinking while working on a monitor or reading, contact lens use, some medications, previous eye surgery (especially laser refractive surgery), neurological conditions such as stroke or facial nerve palsy, trauma such as chemical injury, and autoimmune diseases (including rheumatoid arthritis and Sjogren's syndrome). However, the most common cause of DED is blepharitis (see below).

### Blepharitis (also referred to as Meibomian Gland Dysfunction)

Blepharitis is a very common cause of DED caused by inflammation of the eyelid margins (where the eyelashes emerge). The eyelids contain tiny (meibomian) glands which make an oily secretion. This oily secretion mixes with the tears and is important to help form the normal tear film. In blepharitis, these tiny glands become blocked resulting in a build-up of oily secretions on the eyelids, which then become inflamed. Tears evaporate quickly leaving the ocular surface dry and inflamed. The exact cause of blepharitis is often not known. It is more common with some skin conditions, such as rosacea. However, it is also very common in otherwise healthy people throughout the world and can affect people of all ages.

### What are the symptoms of DED?

- The eyes can feel dry, sore, burning, itchy and/or tired.
- The whites of the eyes may become red.
- A feeling as if there is something in the eye (gritty sensation).
- The eyelids can become red, greasy, irritated and/or swollen.
- Tiny flakes or crusts that look like dandruff can form at the bottom of the eyelashes.
- Possible sensitivity to light.
- Possible blurred vision, this is often intermittent.

## How is DED diagnosed?

DED, including blepharitis, is diagnosed by optometrists and ophthalmologists (eye doctors). A number of tests may be performed to confirm the diagnosis of dry eyes, and review your medications. Further investigations may be requested as necessary.

## What treatments are available for DED?

As there are many different causes and types of DED, the specific treatment depends on each patient and these are discussed below. DED can usually be treated so that the eyes become comfortable and the vision clear. However, it may take some time before an improvement is noticed and DED tends to be a long-term condition requiring ongoing treatment.

### Treating DED: lifestyle changes to consider

- **Ensure you stay well hydrated:** dehydration can cause dry eye symptoms.
- **Examine your work and home spaces:** air conditioning units, radiators and draughts from fans and open windows can contribute to worsening dry eye symptoms. Consider ways to improve the humidity in your room, such as using humidifiers.
- **Moisture chamber goggles:** are cumbersome to wear but help keep the eyes moist (available online).
- **Increase blinking during close work:** for every 20 minutes of close work such as working on devices, computers or reading, it is recommended that you look at something 20 feet away for 20 seconds and blink frequently (the 20-20-20 rule).
- **Review your medications:** some medications can exacerbate dry eye symptoms such as antihistamines and decongestants, heart and blood pressure medication (beta-blockers and diuretics), some antidepressants and antipsychotics, anti-Parkinson drugs, Vitamin-A derivatives (isotretinoin), some oestrogen containing drugs (oral contraceptives and hormone-replacement therapy) and chemotherapy drugs. Please speak to your doctor before considering stopping or changing these medications.
- **Stop smoking and ask others around you to stop:** smoke exacerbates dry eye.
- **Dietary supplements:** there is some evidence that improving the intake of omega-3 supplements improves the quality of oils in the body and has a beneficial effect on blepharitis and dry eye. Caution must be taken if you have liver disease, an irregular heart beat (atrial fibrillation) or are known to have a bleeding disorder.
- **Review contact lens wear:** poor fitting lenses and/or long term or extended contact lens wear may disrupt the tear film and contribute to dry eye and irritation and should be reviewed by your contact lens practitioner.
- **Heat treatment to the eyelids:** this is a very important part of treating blepharitis and is discussed on page 3.
- There are many alternative remedies for dry eye including various dietary supplements but these tend to have little evidence supporting their use and may have serious side effects.

## Treating DED: heat treatment to the eyelids

Regular cleaning of the eyelids is the most important part of both treating and preventing blepharitis and must continue long term to prevent recurring symptoms or further problems. Even if there is another underlying cause for your DED, blepharitis is often present or tends to develop and should be treated. Heat treatment should be performed initially every day, and then can be reduced to several times a week.

### Step 1: Apply heat to the eyelids

This is to help melt the oily secretions which have built up on the eyelids. A common way of applying heat is to use hot compresses to melt the blocked, oily secretions:

- Use some cooled boiled water which is as hot as you can comfortably tolerate, but which won't burn or scald your skin.
- A small amount of tea tree oil may be added to the hot water, but this is optional. Soap or shampoo, including baby shampoo is **not** recommended.
- Soak a clean face cloth, flannel, cotton wool or gauze in the hot water; squeeze out the excess water and put the hot pad onto your closed eyelids.
- Keep the hot pad in place for 10 minutes, re-heating the pad several times as necessary to keep it hot.
- An alternative is to use a commercially available reusable blepharitis eyelid mask/compress. A large range is available in optometrists and pharmacies and online. Manufacturer's instructions must be followed.

### Step 2: Massage the eyes

This helps to further open up the meibomian glands:

- With the eyelids closed, use the compress from step 1 (or a clean pad) to gently massage the eyes in a circular manner for 2 minutes, using clockwise and anticlockwise directions.

### Step 3: Wipe away oily secretions

- The oily secretions should be wiped away with a cotton bud dipped in hot water. Pull the eyelids away from the eye and gently rub along the eyelid margin, being careful to avoid touching the eye surface.
- Alternatively, commercially available **blepharitis eyelid wipes** can be used, available from optometrists, pharmacies and online. Manufacturer's instructions must be followed.

There is increasing evidence that blepharitis is often caused by Demodex infestation. Demodex is a tiny mite which lives on the base of the eyelashes. Tea tree oil has been shown to be a potential treatment and tea tree oil shampoo and a facial cleanser can be used. Some commercially available eyelid wipes also contain tea tree oil and may be effective, including: Thea Blephademodex; Scope Optase; Cliradex; and the Eye Doctor Tea Tree Oil lid wipes. Manufacturer's instructions must be followed.

## Treating DED: other non-surgical treatment options

- **Tear substitutes:** these can be used frequently and often help the eyes feel more comfortable. Many types are available and can be purchased without a prescription, preparations without preservative are preferable. Eye drops are commonly used, gels last longer but may cause blurring of the vision, ointments tend to be used overnight.
- **Antibiotic eye drops or ointments:** may be prescribed by your eye doctor.
- **Oral antibiotics:** may be given for several months to control inflammation. Doxycycline should be avoided in women who are pregnant, those who have liver disease or are taking warfarin or methotrexate and routine blood tests are done every 6 months.
- **Steroid eye drops:** these are effective in reducing inflammation but have significant side effects and are not usually used long-term.
- **Cyclosporine eye drops:** may be given long-term to reduce inflammation, e.g. Ikervis.
- **Secretagogues:** these stimulate your body to produce more tears naturally, e.g. pilocarpine tablets. There are some eye drop alternatives, but not yet available in the UK.
- **Serum eye drops:** serum is the fluid component of blood, eye drops are made from your serum or from a donor can be used for severe DED.
- **Improving tear retention:** tears drain away from the eye towards the nose through a small opening (punctum) in the eyelids. Blocking these openings can be done by:
  - Inserting punctal plugs – a tiny plug which stays in place for several months.
  - Punctal cautery – a minor procedure causing permanent closure of the punctum.
- **Novel therapies:** there are a number of newer therapies that may be promising but have limited evidence and are not available within the NHS:
  - Intense Pulse Light Therapy
  - Thermal pulsation, e.g. Lipiflow®

- Always read the patient information leaflet before taking any medication, this can be found inside the packaging.
- Use medications only as directed by your doctor.
- Do not use any medication after its expiry date.

## Treating DED: surgical treatment options

Surgery is rarely used and is reserved for extremely severe cases of DED where there is a risk to the vision or even the eye itself. Surgery includes procedures to reduce dryness of the ocular surface such as closing the eye by bringing the eyelids together or inserting a thin layer called amniotic membrane onto the surface of the eye for a temporary period.

This information is available in audio, Braille, large print and other languages. To request a copy, please ask a member of staff.

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