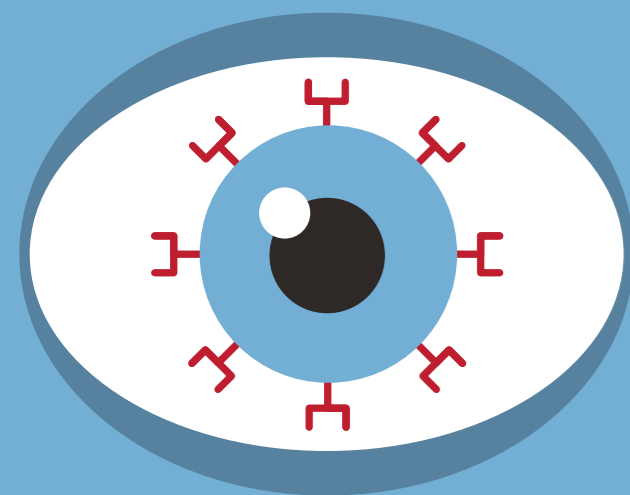




# DRY EYE SYNDROME



## WHAT IS IT?



The eyelids, tears and blink reflex protect the eyes and keep them moist / lubricated in order to maintain consistently clear and comfortable vision. If the eyelids are inflamed or any of the three layers of tears are of poor quality or quantity, this important function is disrupted causing a variety of symptoms depending on which 'defects' are present in each individual.

### SIGNS & SYMPTOMS?

These can include:

- Scratchy feeling on blinking.
- Watery, sore eyes.
- Needle (pricking) sensation.
- Burning/ stinging sensation.
- Gritty (or foreign body) feeling (often with wind/smoke/air conditioning).
- Discomfort/ pain/ redness.
- Deliberate, prolonged blinking.
- Intermittent Blurred vision (often difficulties reading/ concentrating).
- Tired eyes/ frequent eye rubbing.
- Photophobia (light sensitive).
- Uncomfy contact lenses.
- Frequent conjunctivitis/ eye infections.

### WHAT ARE THE CAUSES?

There are many contributing factors:

- Ageing.
- Blepharitis (eyelid inflammation).
- Dry air (radiators/ air con).
- Computer (& other screen) use (blinking is reduced by up to 5x).
- Hormonal changes (esp. female).
- LASIK surgery.
- Preservatives in eye drops.
- Alcohol / dehydration.
- Some types of medication (check with your GP/ side effects list if you take anti-acne, beta-blockers, antihistamines, diuretics, decongestants or anti-depressants).
- Linked to general health issues/ disease eg. arthritis, Sjorgrens, acne rosacea, thyroid disease, diabetes, large eyes & dry skin.

### WHAT IS THE TREATMENT?

Some causative factors might be easily rectified: eg. avoid air conditioning and dehydration, wear glasses to ensure comfortable vision, wear glasses/ sunglasses when it is windy, take regular breaks from viewing screens, practice increased blinking/ full blinks, ask for preservative-free eye-drops.

Often we find a combination of causes, which then means a combination of treatments. To work out which apply to you we need to ask about your symptoms, general health and medication and take a good look at your eyelids and tears under the microscope.

The most common treatment has been the use of lubricating eye-drops, however on their own these are a short-lived 'fix' of the symptoms as they do not treat the cause and cannot replace normal tears which are replenished to protect the eyes with every blink!

To understand better how your tears work and what is causing your symptoms, we need to look at the different layers and how they interact with the surface of the eye and the eyelids. Hopefully this will encourage you to carry out the treatments regularly to avoid the discomfort of 'Dry Eye Syndrome'.

### The "Story" of Dry Eye Syndrome.

If you think of the front of the eye (the cornea) as a windscreen, the tears as the washer water and the eyelids as the windscreen wipers, you will easily understand the importance of keeping the water topped up and replacing the wiper blades when they are damaged. If you don't then the wipers will become 'squeaky' and ineffective, the windscreen will quickly become smeary and difficult to see through and 'glare' from the sun/ headlights will be greatly increased.

### Normal Tears and Function.

- The front surface of the eye (cornea & conjunctiva) detects when the tears are beginning to evaporate (the eye is starting to dry out) and a reflex blink is initiated.
- Mucous (sticky) tear layer (produced by glands in the conjunctiva, it adheres the watery layer to the surface of the eye).
- Watery tear layer (contains salts & antibacterial agents, produced by a large gland under the top lid, it keeps the eye hydrated/moist).
- Oily tear layer (to lubricate lid blinks and prevent rapid evaporation of the watery tear layer, produced by many small glands opening onto the top and bottom eyelid margins (where the inside of the eyelid meets the outside of the eyelid)).
- Eyelids: firstly sweep watery tears across the eye as the lids close, then as the top and bottom lids meet the oily tears are 'pumped out' and as the eye opens again the oily tears coat the watery layer to reduce evaporation.

### Disruption of the Tear Layers.

#### 1. BLINKING

- infrequent: means that tears are not being replenished often enough and the eyes are drying out = gritty, watery, red, blurry symptoms (the reflex blink can be overridden by contact lens wear, concentrated focusing or staring at screens, it can also be reduced in diabetics due to loss of corneal nerves).
- incomplete: means that the oily tear layer is not effective, evaporation is rapid and the lower portion of the eye becomes very dry = pricking, risk of eye infections (common with large eyes, thyroid disease and contact lens wear).

#### 2. EYELID INFLAMMATION (BLEPHARITIS)

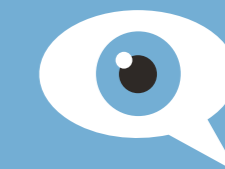
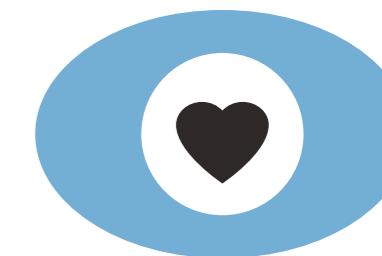
- eyelash based: flaky, dead skin around the eyelash base disrupts tears = 'food' for staphylococcus so risk of eye infection, itchy eyelids. Soften the dead skin with hot water/ steam and 'sweep' off the eyelashes with a cotton bud (like putting on mascara!).
- skin based: reddened, vascularised, notched, hardened, thickened, scarred = disrupts oily gland function by distorting the lid margins and sealing the gland openings. Needs regular (mildly abrasive) cleaning and softening. (Common in acne rosacea).
- oily gland based: due to hardening (keratinisation) of the gland linings the oily secretion is contaminated with keratin which raises the melting temperature of the oil above body temperature. The clear oil begins to solidify and become white, eventually blocking the gland = disruption of the oily layer and smeary vision (You may have noticed little bumps on the lid margins where it comes to a 'head', these can be pressed/ squeezed to (temporarily) unblock the gland; easier after heat treatment with an eye mask at 39 degrees applied for 5 minutes to melt the solid fat back to an oil). Common with arthritis, hormone changes and dry skin conditions.

#### 3. WATERY LAYER

- rapid evaporation: when the oily tears are not functioning properly it means that the small amount of watery tears remaining on the eye becomes very salty = stinging and burning sensation. This can be treated with HYPOTONIC eye drops to neutralise the salts.
- excessive watering: (the great paradox!) this occurs in response to the gritty dryness of the eye surface, as the eye 'thinks' the irritation is caused by a foreign body that needs to be flushed out (the watery layer may not adhere well if the mucous layer has been damaged by the high salt levels over a long period of time).  
Continued >

#### 4. MUCOUS LAYER

- erosion: if this layer of tears is eroded, the salts start to attack the surface of the eye = PAIN! Recent studies are also suggesting regular use of Omega 3 supplements (or eating oily fish) and Evening Primrose oil.



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