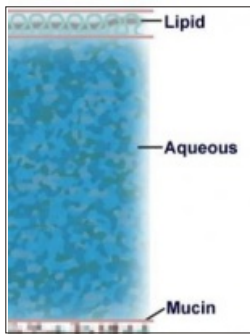


FACT SHEET

'Dry Eye': a poor term to describe ocular discomfort

There are many reasons eyes feel irritable or gritty. Very few because the eye surface is truly Dry. If a patient reports symptoms of ocular irritation and grittiness it is simply too easy to label it as 'Dry Eye' and prescribe drops! Treatments must reflect the underlying reason for the irritation and need to be investigated.



Tears have three layers :

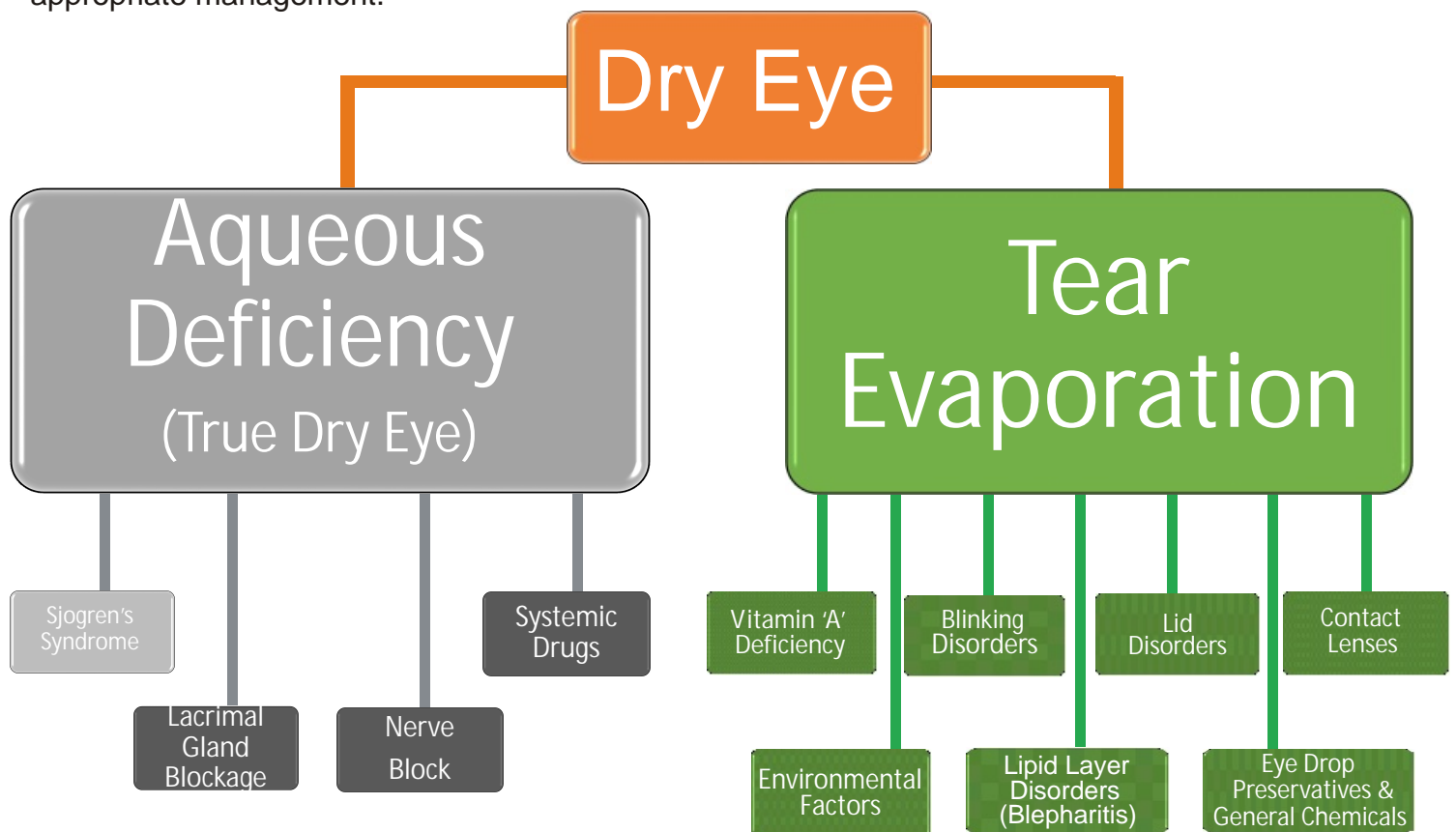
- 1) Mucous (closest to the eye) helps hold the tears onto the eye surface.
- 2) A thick water layer lubricates and carries nutrients.
- 3) Very thin lipid (oil) layer stops the tears evaporating and holds them upright.

Further: Tear distribution across the eye surface is complex.

Mucous is produced in Goblet Cells within the conjunctiva (Vitamin A is vital for healthy goblet cells). The lipid (oil) is produced in Meibomian glands in the upper and lower lids, just behind the eyelashes. Blockage, infection, inflammation or drop

out of the meibomian glands allows tears to evaporate too rapidly. The water component comes from a gland behind the upper lid. The tears roll down the eye surface and are distributed by the upper lid which does all the blinking. It has to come all the way down and touch the lower lid before returning. The tears pool on the lower lid creating a reservoir. The lower lid's role, moving left and right, is to pump tears toward the nose, to the drainage duct and into the nose.

Disruption to any of these processes and structures will compromise the delicate tear coverage resulting in irritable, gritty, uncomfortable eyes. The cause must be investigated to ensure the most appropriate management.



Tear Deficient Dry Eye 'True Dry Eye'

Sjogren's Syndrome

Lacrimal Gland Blockage

Nerve Block

Systemic Drugs

Tear Deficient 'Dry Eye': An outcome of a medical problem.

Systemic diseases, notably Sjogren's Syndrome, carry effects throughout the body, not just the eyes. Inflammation, Trauma, Mechanical Blockage loss of nerve supply to the eye surface and some Medications reduce or destroy the lacrimal gland's ability to produce aqueous tears. If these problems are suspected the investigating Optometrist may co-manage with the patient's GP or refer to Ophthalmology or Rheumatology. Very often though the condition can be managed, with the patient's agreement, within the community.

Evaporative 'Dry Eye'

Lid Disorders

Lipid Layer Disorders (Blepharitis)

Blinking Disorders

Environmental and Lifestyle Factors

Eye Drop Preservatives & General Chemicals

Evaporative 'Dry Eye'

is an extremely general phrase to incorporate a large number of lid, tear, medication and environmental problems encouraging more rapid evaporation of the tears from the eye surface.

General Irritations

General Chemicals

Acute irritation from pool chemicals, fumes or plant extracts can cause the eyes and eye lids to become red and puffy. Importantly the eyes will also water. This is a natural response to dilute and wash out the irritant.

These episodes are self limiting but comfort can be enhanced by cooling and wetting the eyes. These episodes are self limiting but comfort can be enhanced by cooling and wetting the eyes. Simple cold compresses can help cool the mild inflammation.



Eyewashes, such as Blink Cleansing Eye Wash, dilute and flush out the offending irritant. For acute irritation the solutions are not recommended for prolonged use. If symptoms do not improve rapidly then a more chronic problem is suggested which may require different management.



Therapeutic drops can also give symptomatic relief and help flush toxins.

Hyabak and Hycosan Fresh: recommended for irritated or mild dry eye.

Hyabak: Viscosity matches natural tears so there is no stickiness or blurriness.

Hycosan Fresh: Contains Euphrasia a natural anti-inflammatory helping de-congest eyes and lids relieving eye fatigue symptoms.

Eye Drop Preservatives

Preservatives: Multi-dose eye drops must be kept sterile once open. This necessitates preservatives. Preservatives, while killing bacteria, will also be toxic to our own delicate ocular surface tissues. Over use of preserved drops will worsen the symptoms you are trying to solve.

Benzalkonium Chloride and Cetrimide are the worst offenders. These are present in therapeutic drops, for instance Glaucoma Medications, but also in many 'Dry Eye' drops available over the counter. There are numerous examples of patients instilling more and more drops to relieve the symptoms of 'Dryness' when in reality they are escalating the problem by putting toxins on the eye surface. A Rule-of-Thumb: preserved drops must never be put in more than 4 times a day. At Aarons we avoid the problem by simply NEVER prescribing preserved medications. All medications prescribed are Non-Preserved, even the multi-dose bottles. These are slightly more expensive because of the unique, patented, bottle designs, releasing a single non-preserved drop while keeping the remainder sealed, sterile and non-preserved. We will not compromise on this.

Environment and Lifestyle



Many people find their eyes become tired and irritable in drying atmospheres. Understandably this includes most office workers. It is, of course, much easier said than done to rectify the problem. Humidifiers and Plants help: the greater the ambient humidity the less evaporative drag off the front of the eye. Liposomal sprays, we recommend OPTASE EyeSpray, supply an artificial lipid (oil) layer to the front of the tears helping to stop evaporation.



While ocular lubricants are very helpful it is important to try to hydrate from inside out as well as from outside in: drink lots of water (enough to make urine run clear). Eating two portions of oily fish a week is highly recommended. Alternatively, an Omega-3 fatty acid supplement will provide proper nutrition for meibum (oil) production. We supply Omega Eye a medical grade Omega 3 recommended by the Eye Department in the RVI (more detail page 4).

Blink Patterns and Blinking Disorders

Blinking rates and patterns, as well as lid disorders, can also affect evaporation. Normal blink rates, which re-distribute tears, are about 16 per minute. During concentrated visual tasks this can drop to 4! This notably occurs using Desk Top Computers. Evaporation is increased with Desk Tops because not only does our blink rate drop, but since we are not looking down as with reading a book or tablet, our eyes are wide open exposing a larger area for evaporative drag. Incomplete blinking also encourages rapid surface drying, while in Lagophthalmos the lids remain slightly open during sleep giving greatest discomfort on waking. Bell's Palsy, lid surgery, both therapeutic and cosmetic, are also problematic.

Lid Disorders and Blepharitis

Lid Disorders

Reduced lid tone (loose lids) with age can result in lids turning in or out causing several ocular discomfort. As we age lid glands may simply work less well allowing tears to evaporate too quickly. Sometimes lid surgery may be recommended but in mild cases medical grade lubricants will be the management of choice.

Lipid Layer Disorders (Blepharitis)

The lipid comes from glands in the lids. If these glands become blocked or infected the lipid layer will be poor and the tears will evaporate too quickly. The eyes will feel dry, but may actually water as well because the tears are not held on the eye properly.

To relieve the symptoms a tear substitute will lubricate the eye and make it feel more comfortable. Advanced drops such as Hycosan Dual or Thealoz Duo, as well as giving symptomatic relief and flushing toxins from the ocular surfaces, help form a natural dual barrier against environmental pollen, dust particles and animal hair. This helps Stabilise the tear film and lipid layer in Posterior Blepharitis.



The Liposomal Sprays, OPTASE EyeSpray, can also give symptomatic relief by supplying an artificial lipid (oil) layer to the front of the tears helping to stop evaporation. If the glands are functional, it is better to treat the Blepharitis rather than simply adding lipid. However, especially with older lids, the glands may drop out completely and then the liposomals are very important.



It must be stressed tear substitutes and wetting agents do not treat or cure the problem. The mainstay of treatment is vigorous lid hygiene techniques which aim to remove oils and debris from lid margins, reduce bacterial load on lids and promote lipid flow. A full description is in our 'Blepharitis' Fact Sheet.

Medical Grade, Non-Preserved, Lubricants

If tear volume or quality reduces the tears become concentrated. This damages the delicate surface tissue of the eye (epithelium) and within it the goblet cells which produce the mucous. This will eventually cause chronic eye irritation and long term damage. Simple lubricating drops are not adequate. We recommend third generation medications.

Sodium Hyaluronate, an effective moisturiser found in nature mimics natural tears, helping improve tear quality, allowing the tissues and goblet cells to heal.

Euphrasia is a natural anti-inflammatory helping to de-congest eyes and eyelids.

Ectoin forms a natural dual barrier against environmental irritants such as pollen and stabilises the lipid layer.

Trehalose protects epithelial cells on the ocular surface, improving resistance to daily stresses of dry environments.

As Medical Optometrists we feel it is important to mirror the clinical management recommendations of the Eye Department at the Royal Victoria Infirmary. All lubricants, wipes and tablets prescribed by us are those recommended by Ophthalmology

All drops contain Sodium Hyaluronate, an effective moisturiser found in nature mimicking natural tears.



Hyabak and Hycosan Fresh are recommended for irritated or mild dry eye. Our general purpose drops.

Hyabak: Viscosity matches natural tears so there is no stickiness or blurriness after application.

Hycosan Fresh: Contains Euphrasia a natural anti-inflammatory helping de-congest eyes and eyelids relieving eye fatigue symptoms.

Hycosan Dual with the addition of Ectoin forms a natural dual barrier against environmental pollen, dust particles and animal hair. Stabilises the tear film and lipid layer in Posterior Blepharitis.



Hycosan Extra and Theoloz Duo are our drops of choice when there is significant corneal staining.

Theoloz Duo: Trehalose protects epithelial cells on the ocular surface, improving their resistance to daily stresses of dry environments.

Hycosan Extra has a high resting viscosity but with little or no blurring of vision.



Vitapos soothes dry, itchy eyes while you sleep. Contains Vitamin A, beneficial for Goblet Cells which produce the mucous component of the tear layer. For improvement of the tear film and protection of the ocular surface.

Omega Eye (Medical Grade Omega 3): Recommended for all 'Dry Eye' patients is an Omega-3 fatty acid supplement providing proper nutrition for meibum production. Omega Eye capsules specifically contain RTG (re-esterified triglyceride), the correct form of Omega 3. Omega Eye is recommended to relieve the symptoms of ocular surface disease from within. Four capsules daily provide a therapeutic dose of 2.2 gms of EPA and DHA (the only essential fatty acids proven to have health benefits) giving the necessary amount of anti-inflammatory benefits. Omega Eye also contains Vitamin D3. Contaminant and toxin free, this the only supplement recommended by the Eye Department in the RVI.



'Prescription Only' Medications (Medical, Prescribing Optometrists only)



If tear quality is very poor the mucous becomes thicker and actually scratches the eye surface. Acetylcysteine (ILUBE) breaks down mucous and also lubricants to soothe the eyes as well. Soft steroids such as Fluorometholone and IKERVIS, the immunomodulator Ciclosporin, can also be prescribed to reduce the inflammatory cycle accelerating the dry eye disease process.