



## DRY EYE SYNDROME

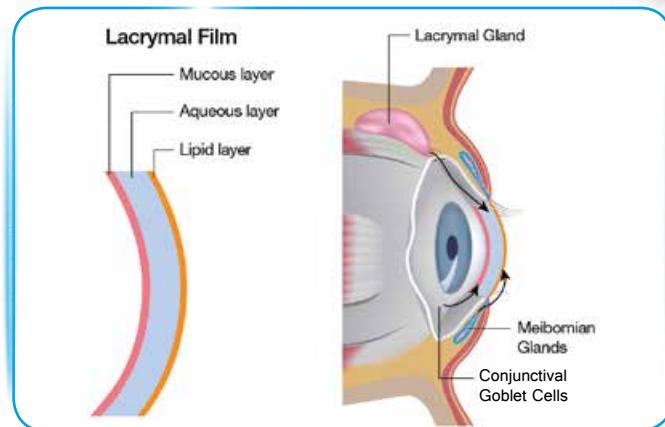
An increasingly  
common condition

A NEW THERAPEUTIC  
SOLUTION AVAILABLE

# Tear film

## STRUCTURE

- The aqueous layer is secreted by the lacrimal glands.
- The lipid layer is secreted by the Meibomian glands (located at the free margin of the eyelids).



## ROLE

- **To protect the cornea:**
  - Preventing the cornea from drying out <sup>(1)</sup>.
  - Reducing the risk of infection <sup>(2)</sup>.
- **To maintain optical comfort:**
  - The tear film is one of the eye's 'optical components'.
  - Its alteration will modify visual acuity and the perception of surrounding light.

<sup>(1)</sup> The cornea needs to remain permanently hydrated in order to maintain its structure and optical properties.

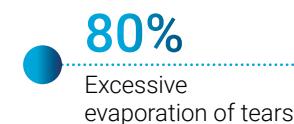
<sup>(2)</sup> The condition of the tear film is very important when it comes to protect the cornea from external infectious agents.

# Alteration of the lacrimal film: Dry eye syndrome

- The dry-eye syndrome is a common pathology affecting – depending on the area – around 20% of the population with increased symptoms in advanced age.

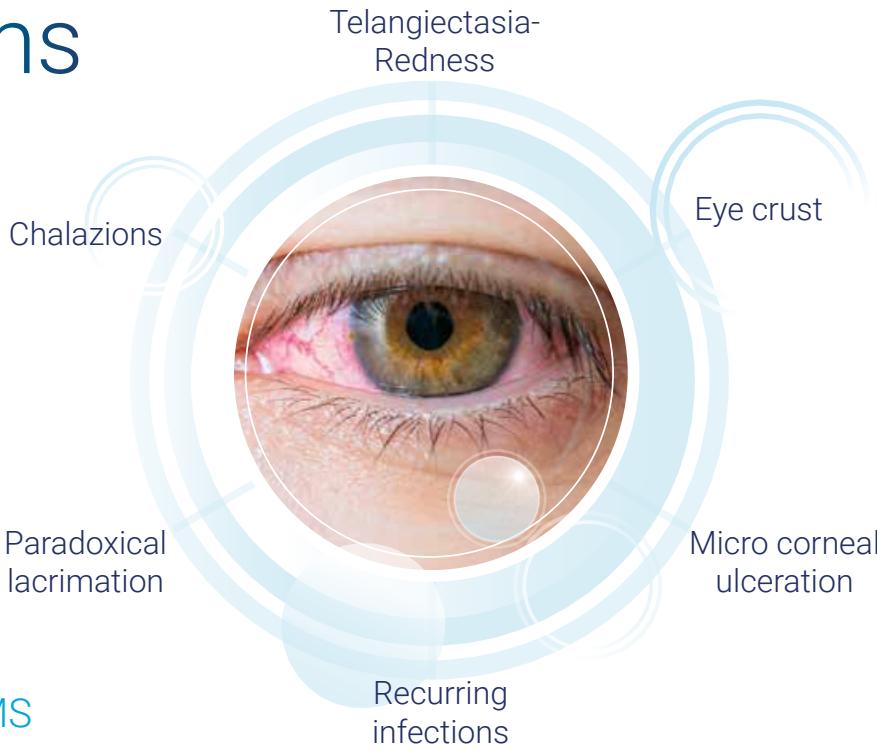


- The vast majority of dry eye syndromes (80%) are originated from a deficiency of the Meibomian glands (which secrete the lipid layer).
- As the lipid layer becomes thinner, it tends to disappear from the film surface after just a few seconds.
- As the aqueous layer is no longer protected, it will quickly evaporate and leave the cornea unprotected.



# Symptoms

## 'VISIBLE' SYMPTOMS



## THE FELT SYMPTOMS

- **Gritty eyes**
- **Pain / burning sensation**
- **Photophobia:** feeling of discomfort in strong light (sun) or for example from car headlights in the dark
- **Blepharospasm:** eyelid blinking can become increasingly frequent, without bringing any relief
- **Decreased visual activity**  
Screen reading difficulties, driving by night, watching TV
- **Difficulty on wearing contact lenses**



# Causes



# Causes

## EYE SURGERY

Nerve fibres are one of the cornea's components that allow us to feel and respond to lacrimal flow fragility:

- If the film deteriorates, pain is felt, triggering a blinking of the eyelids.
- This blinking makes the Meibomian glands contract, leading to secretion of the lipid layer, and again protecting the eye.

During certain surgical operations the corneal nerve fibres are cut off. A decrease in the cornea's natural sensitivity is noticed.

Due to the lacrimal film alteration caused, the cornea no longer detect correctly the sensations. The eyelids contract less frequently thus the Meibomian glands are less often requested. The dry eye syndrome appears.

## HORMONAL IMBALANCES

Women are generally more prone to dry eye syndrome due to frequent hormonal changes and taking oral contraceptives. Hypothyroidism type disorders are frequently responsible for dry eye.

## SCREENS

Concentrating on screens (TV, computer, smartphone, tablet, etc.) leads to less blinking of the eyelids which is a mechanical element needed for lipid secretion by the Meibomian glands.

Less blinking means less contraction of the glands. The secretions remaining in the glands, thicken, and eventually plug the glands (which can lead to localised infections such as chalazions).

## MEDICAL TREATMENT

Many medications can harm the ability of the eye to produce tears.



## INFECTIONS / ALLERGIES

- Any phenomenon leading to inflammatory process will potentially alter the functioning of the Meibomian glands and lead to dry eye syndrome.
- A vicious circle follows: The alteration of the lacrimal film induced will promote the persistence of the inflammatory process and a lack of protection against external agents.

## FOOD

Omega 3 deficiency increases the risk of ocular dryness.

## DESICCATION

Lacrimal film is altered by the desiccation of air treated by air conditioners, which can bring out a latent fragility and lead to dry eye syndrome.

## POLLUTION

When the surrounding air is polluted, the micro particles suspended will create irritation and potentially inflammation of the eyelids.

The inflammation spreads to the Annexes of the eye, including the Meibomian glands. The slight edema that is taking place is enough to clog the excretory duct. It then follows at minimum a reduced secretion of meibium, and in some cases episodes of recurrent chalazion.

## AGE

Historically, age has been the leading cause of dry eye syndrome. With ageing, the Meibomian glands tend to:

- Become scarce
- Become more 'lazy'
- Be less called by the lowering eyelid muscle tone.

# Therapeutic solutions

There are traditionally two types of therapeutic solutions:

**Palliative solutions:** these solutions do not heal, but simply relieve the patient. Their use must therefore be permanent.

**Curative solutions:** these solutions provide a lasting or even definitive solution to the pathological problem. They are administered punctually and their frequency often depends on the patient's age and lifestyle.

## PALLIATIVE SOLUTIONS

### • Hygiene measures

- These are very important when it comes to dry eye syndrome.
- They consist of applying warm compresses to the eyelids and:
  - gently massaging each eyelid
  - regular cleansing to remove any crusts.

### • Artificial tears (or tear substitutes)

When the lacrimal film has been altered, tear substitutes can compensate for this deficiency. The disadvantage is that applications required every day are frequent.

### • Eye drops with active molecules

These are eye drops containing antibiotics, anti-inflammatories, immunosuppressants, etc. Their primary goal is to tackle the infectious / inflammatory component of dry eye syndrome, thereby breaking the vicious circle associated with the inflammatory process.

### • Lacrimal plugs

Small plugs inserted into the lacrimal ducts to block them. Tears are no longer collected and thus remain on the corneal surface more longer.



## CURATIVE SOLUTIONS

- The aim is to have sustainable working of the Meibomian glands and their natural function again.
- The pain will disappear very quickly.
- The inflammatory symptoms will be regulated after a few weeks.

These effects are obtained with the **E-Eye** device.



# A technological solution for treating dry eye syndrome

## HOW DOES IT WORK?

**E-Eye** is a device that deliver, very short and specific flashes of light.



# An EYE session in practice

TOTALLY PAINLESS AND SHORT SESSIONS



- **Just 3 to 4 sessions:**

- Only a few minutes per session
- Short treatment protocol:
  - Day 0
  - Day 15
  - Day 45
  - Day 75 (optional)

- **Efficiency in 85% of cases**

- **Lasting effects:**

- Over 3 years for 60% of patients

- **Cumulative effects:**

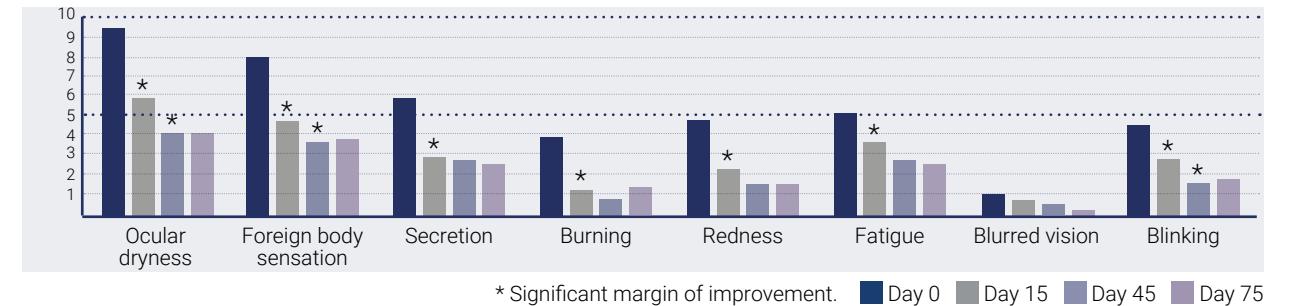
- The long lasting results is due to more sessions done

# Significant Results

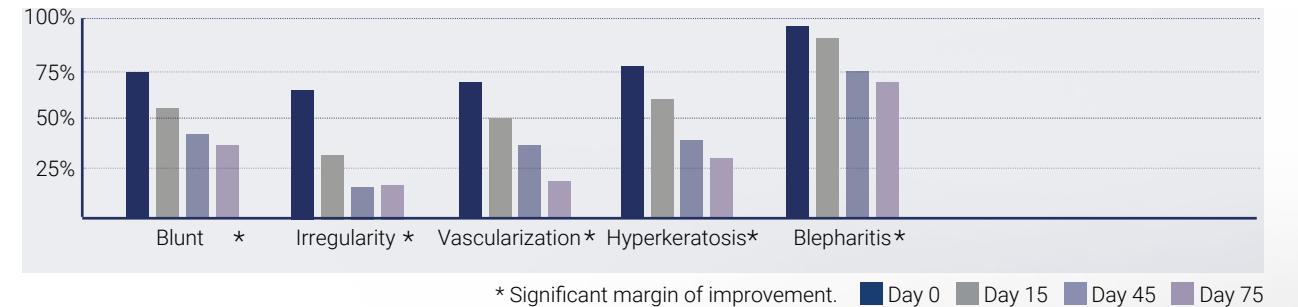
WHAT ARE THE RESULTS?

## Clinical studies

Perceptions of patients, rated from 1 to 10.



Clinical percentage measurements.



TO WHOM IT MAY CONCERN?

EYE has been developed to meet the expectations of the vast majority of patients with dry eye syndrome.

Some contraindications exist, however, such as the concomitant use of photosensitising medicines or specific dermatological pathologies.

A health form will be completed before each EYE session.





your dry eye care partner

[www.esw-vision.com](http://www.esw-vision.com)