Dry Eye Syndrome by

Antares

Marco D'Aquila

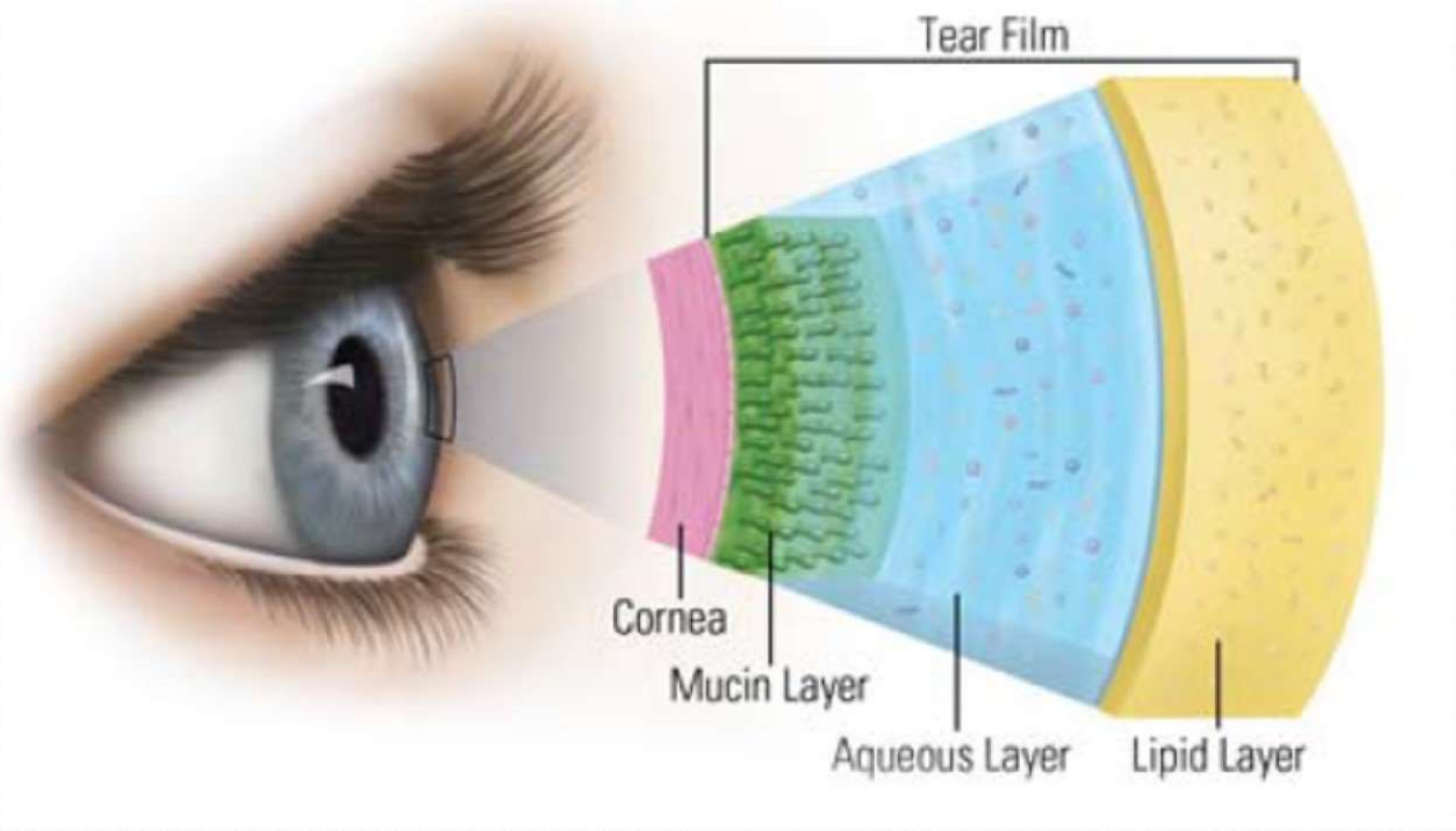
Venezia CSO distributor meeting – 6-9/04/2018

Tear-film

Secretion of tears serves to

- Protect the eye
- Lubricate the eye
- Feed the eye
- Optical transparency
- Clean the eye (Wiper)

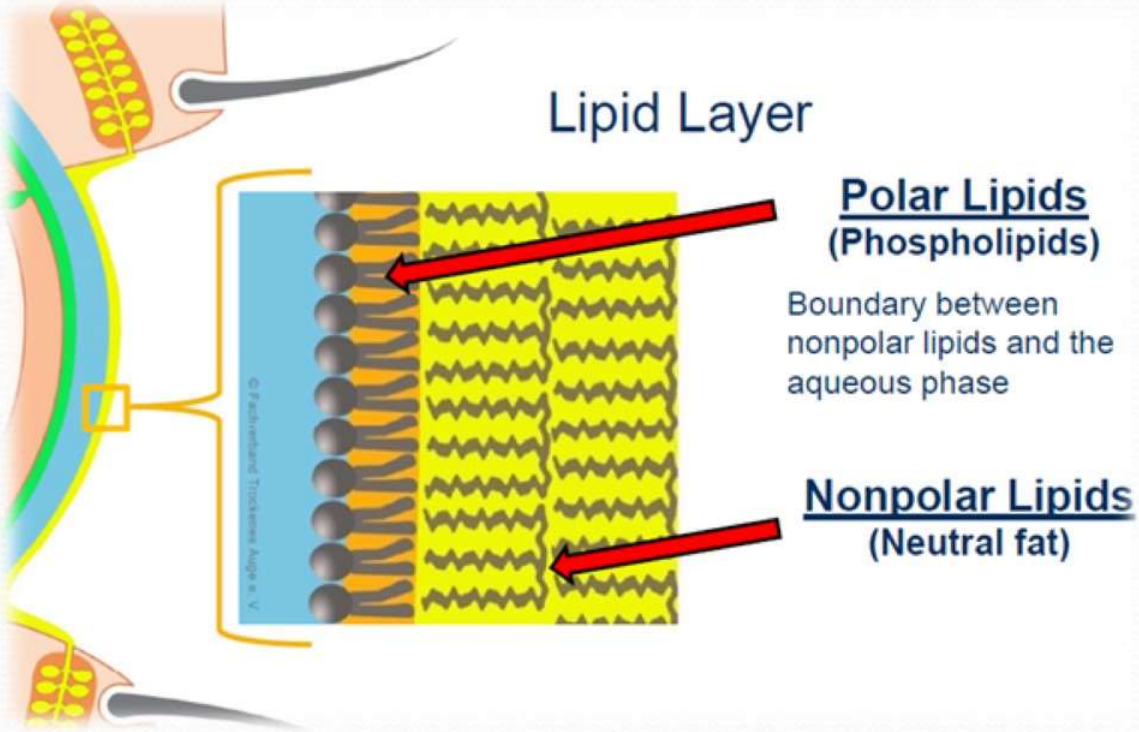
Tear-film structure



Tearfilm structure

- Mucous layer:
  - Deeper tear-film layer
  - Coats the cornea, provides a hydrophilic layer and allows for even distribution of the tear film.
- Aqueous layer:
  - Intermediate tear-film layer
  - Promotes spreading of the tear film, the control of infectious agents and osmotic regulation.
- Lipid layer:
  - Outer tear-film layer
  - Coats the aqueous layer, provides a hydrophobic barrier that envelops tears and prevents their spilling onto the cheek.

Lipid layer



- Protection against evaporation
- Thickness: 0.0004 to 0.4 µm (1% of the total tearfilm Thickness)
- Produced by **Meibomian Glands**, Zeis and Moll glands

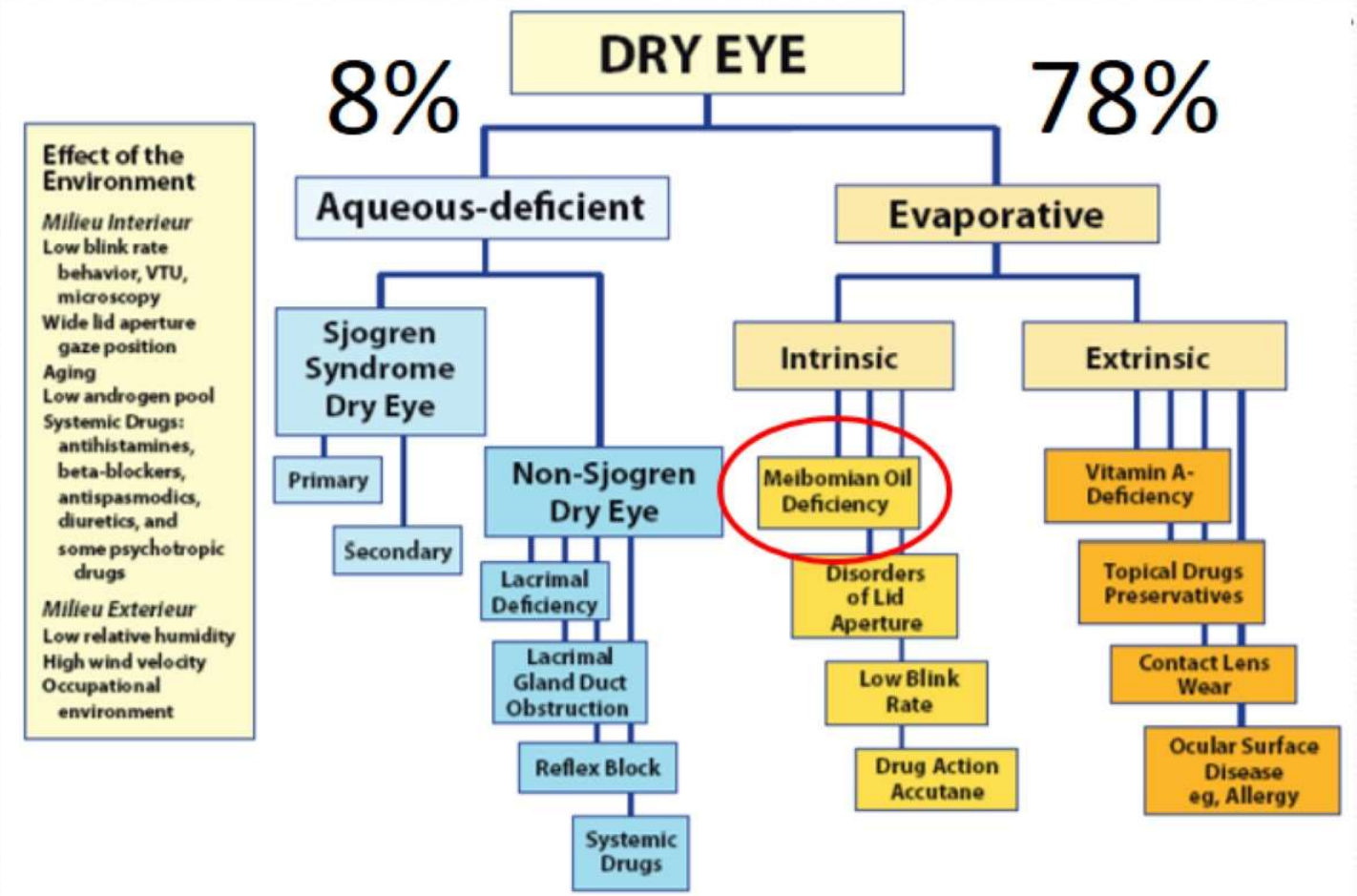
DES (Dry Eye Syndrome)

- **Dry Eye Syndrome** (DES), also known as **KeratoConjunctivitis Sicca** (KCS), is the condition of "*having dry eyes*".
- Other associated symptoms include **irritation**, **redness**, **discharge**, and **easily fatigued eyes**: **blurred vision** may also occur.
- The symptoms can range from mild and occasional to severe and continuous. Scarring of the cornea may occur in some cases without treatment.

DES is usually due to inadequate tear production from lacrimal hyposecretion or to excessive tear evaporation.

- The aqueous tear layer is affected, resulting in **aqueous tear deficiency** (ATD). The lacrimal gland does not produce sufficient tears to keep the entire conjunctiva and cornea covered by a complete layer.
- Evaporation deficiency are usually in charge of Lipidic layer: **Meibomian Glands Disfunction** (MGD) leads to evaporation deficiency.

DES (Dry Eye Syndrome)



The Ocular Surface April 2007, Vol. 5, No.2 - Major etiological causes of Dry Eye

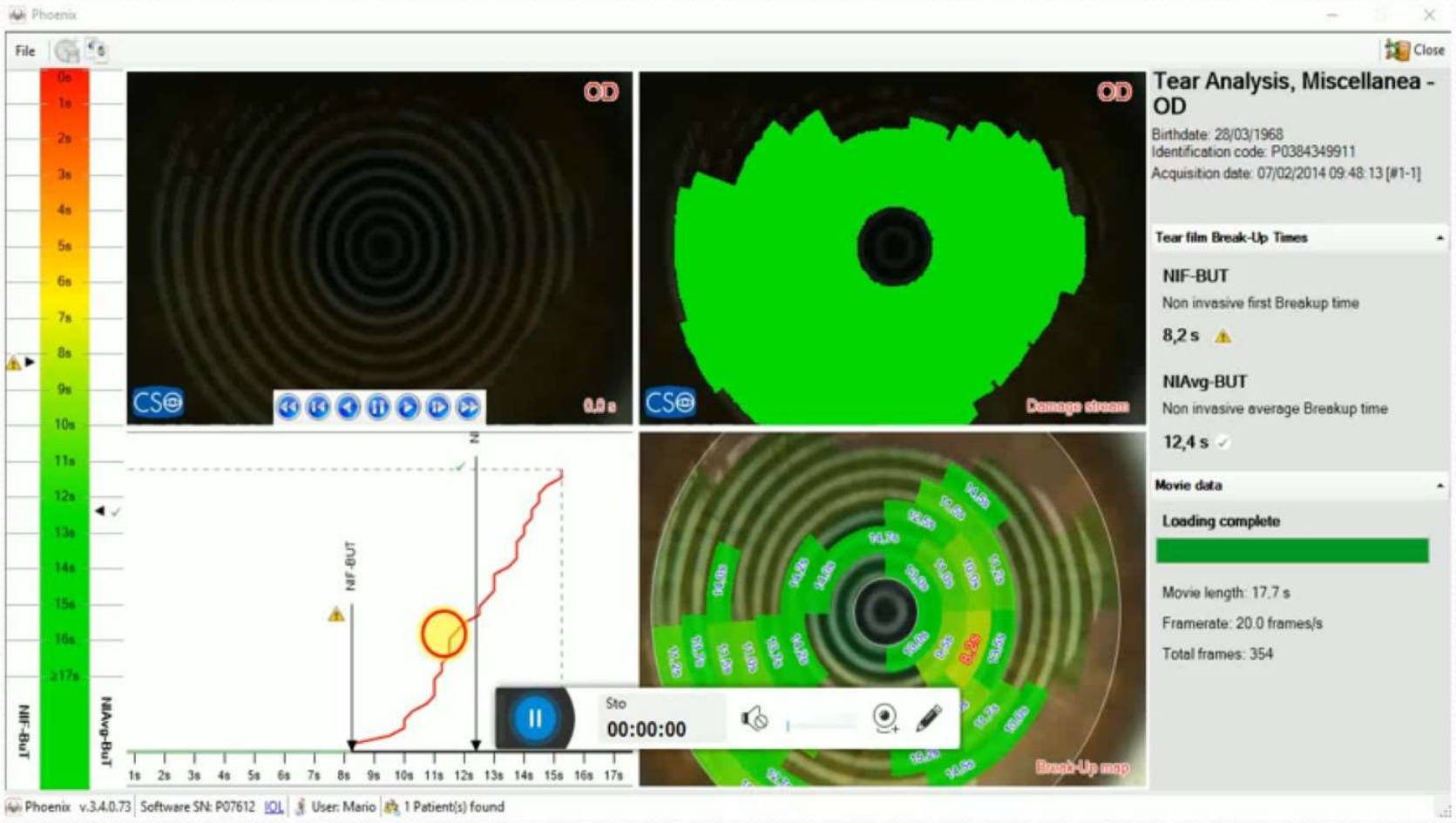
Diagnostic test

- OSDI or similar

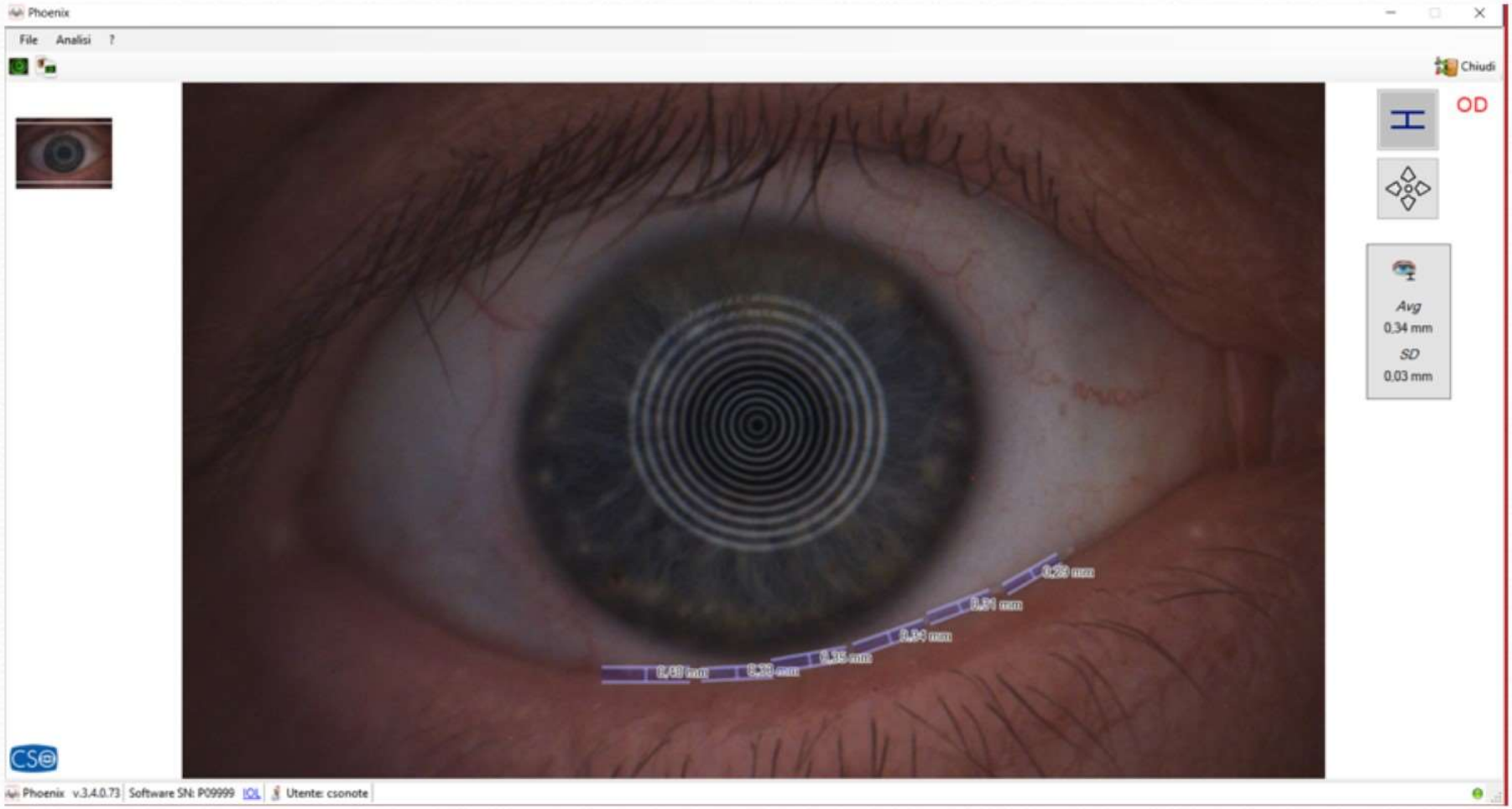
- Schirmer test
- Ferning
- **Break-up time (BUT)**
- **Tear dynamic**
- tear pH measurement
- **Lipidic layer evaluation**
- **Tear meniscus height**

- **Meibomian glands evaluation**

NI-BUT


Phoenix
File
Close
OD
OD
Tear Analysis, Miscellanea - OD
Birthdate: 28/03/1968
Identification code: P0384349911
Acquisition date: 07/02/2014 09:48:13 [#1-1]
Tear film Break-Up Times
NIF-BUT
Non invasive first Breakup time
8,2 s
NIAvg-BUT
Non invasive average Breakup time
12,4 s
Movie data
Loading complete
Movie length: 17.7 s
Framerate: 20.0 frames/s
Total frames: 354
Damage stroma
Break-Up map
NIF-BUT
NIAvg-BuT
Sto
00:00:00
Phoenix v.3.4.0.73
Software SN: P07612
IOL
User: Mario
1 Patient(s) found

Tear meniscus height



LIPIDIC LAYER EVALUATION

MGD

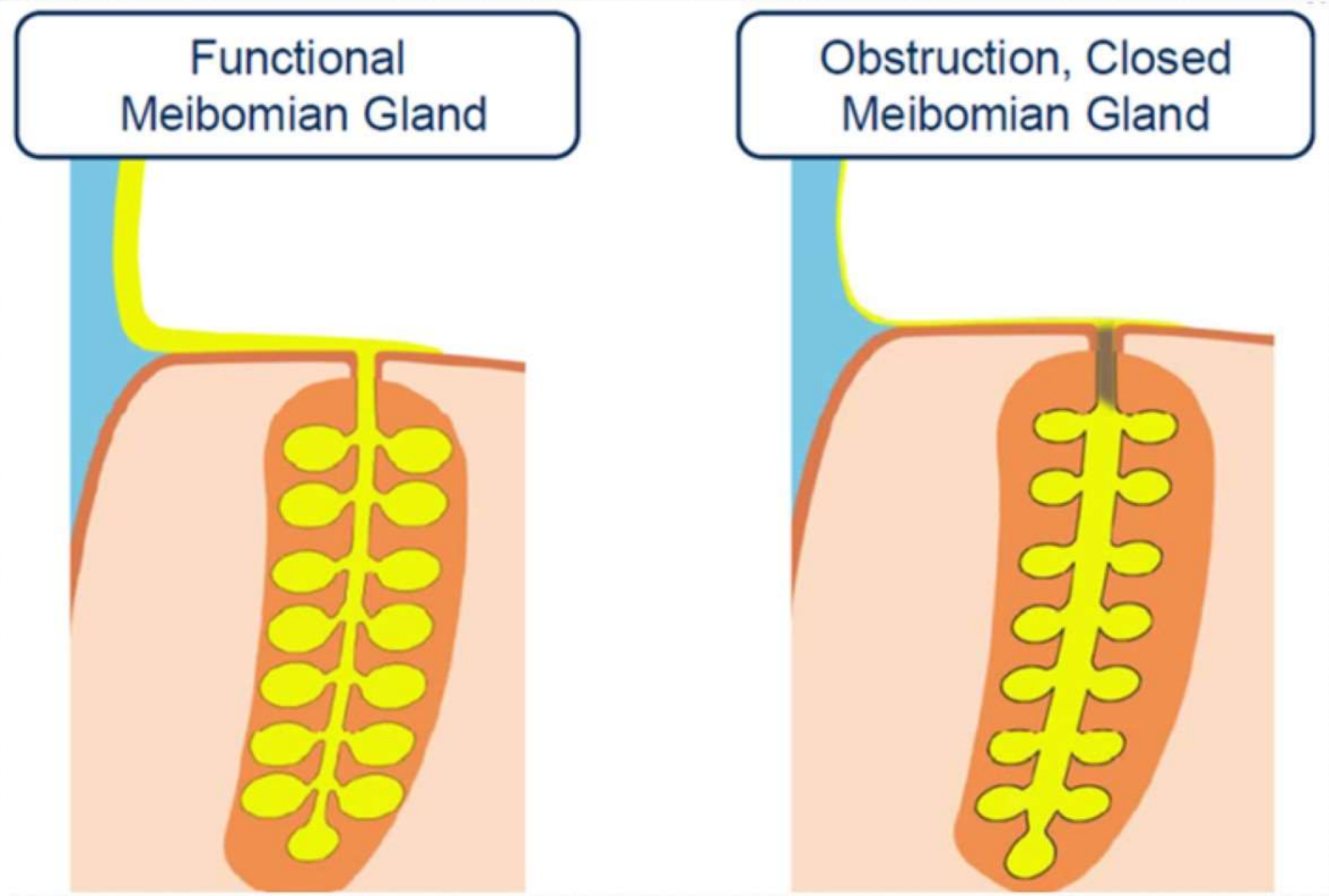
"70.2% of all patients showed sign of ***Meibomian Gland Dysfunction"****

- J.Hornwath, *Frequency of MGD (Meibomian Gland Dysfunction) in a clinical population with dry eye*, Winter 2012

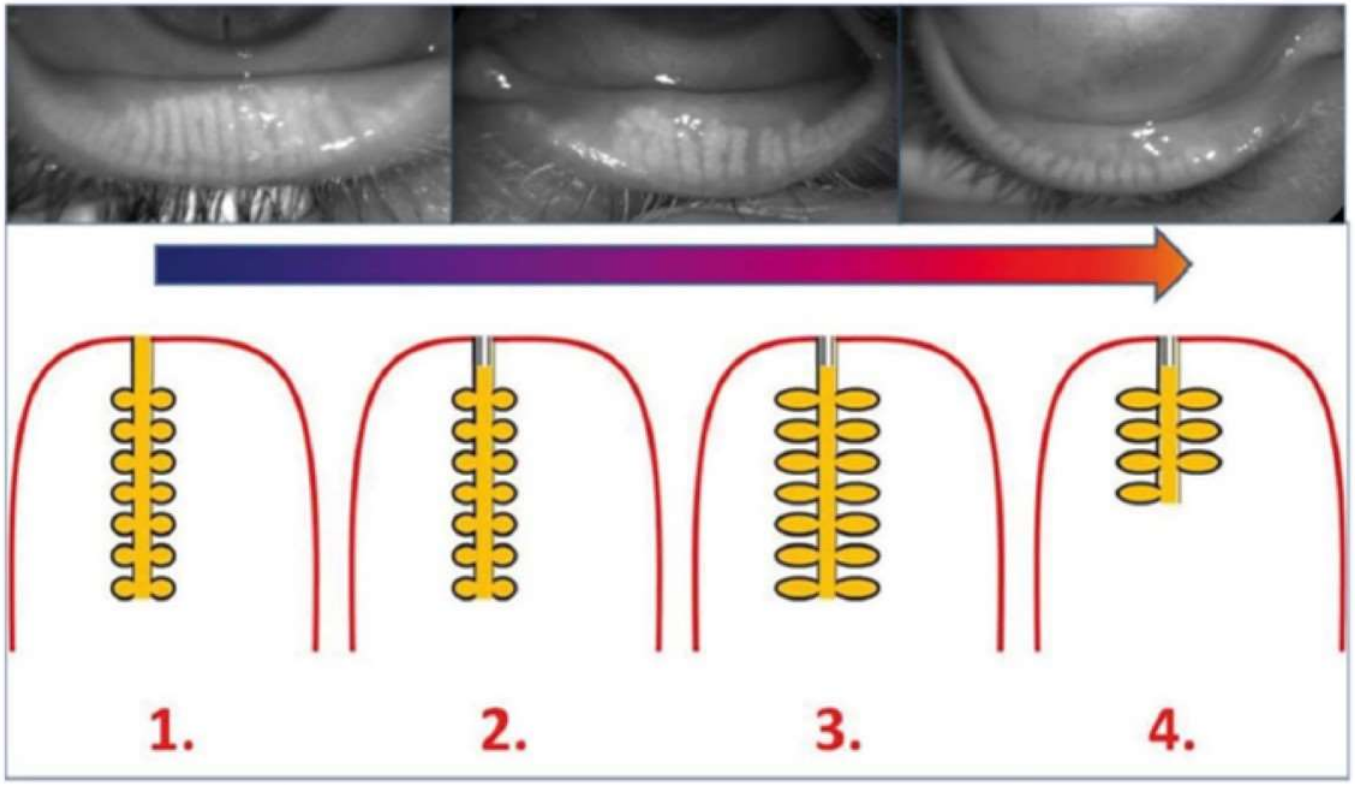
Causes:

Age, Gender, Environment (air conditioning), work situation, blepharitis, hormones, pharmaceuticals, CL wearing

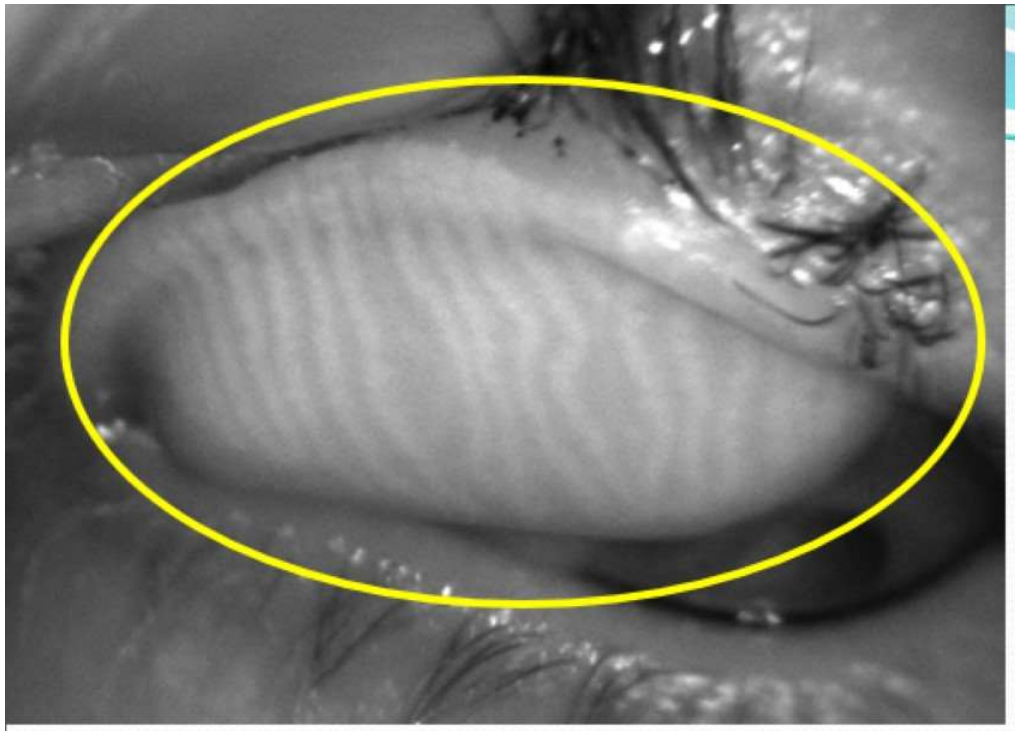
MGD

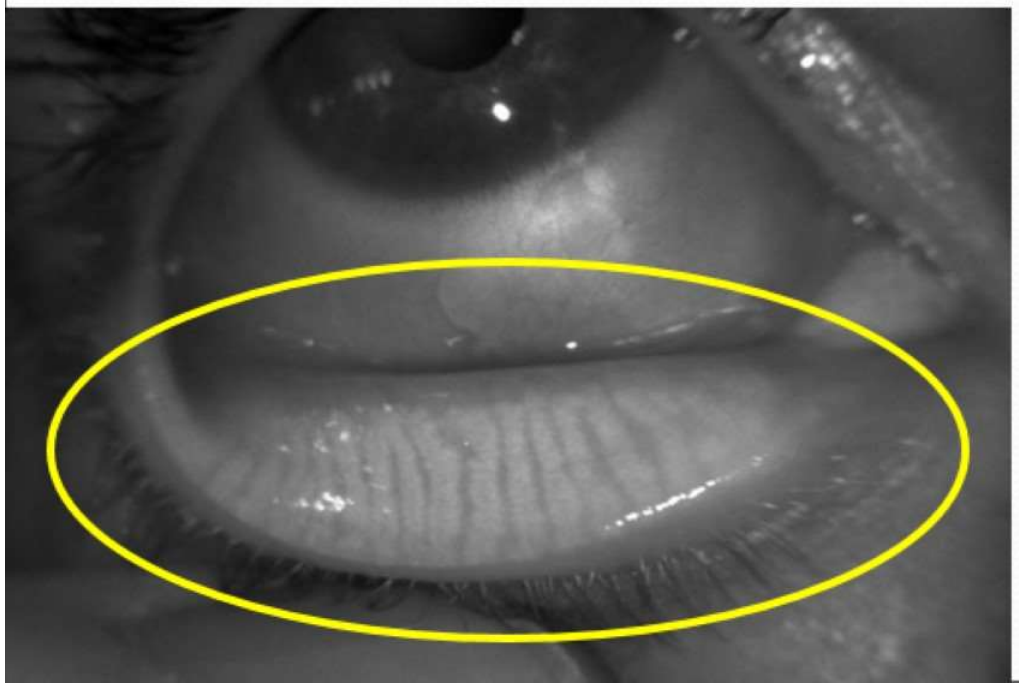

Functional
Meibomian Gland
Obstruction, Closed
Meibomian Gland

MGD:



1. Increased viscosity of the Meibomian oil
2. Gland hyperkeratinization and obstruction
3. Stasis, increased pressure with dilation of ductal system
4. Atrophy of the gland acini, gland shortening, gland loss

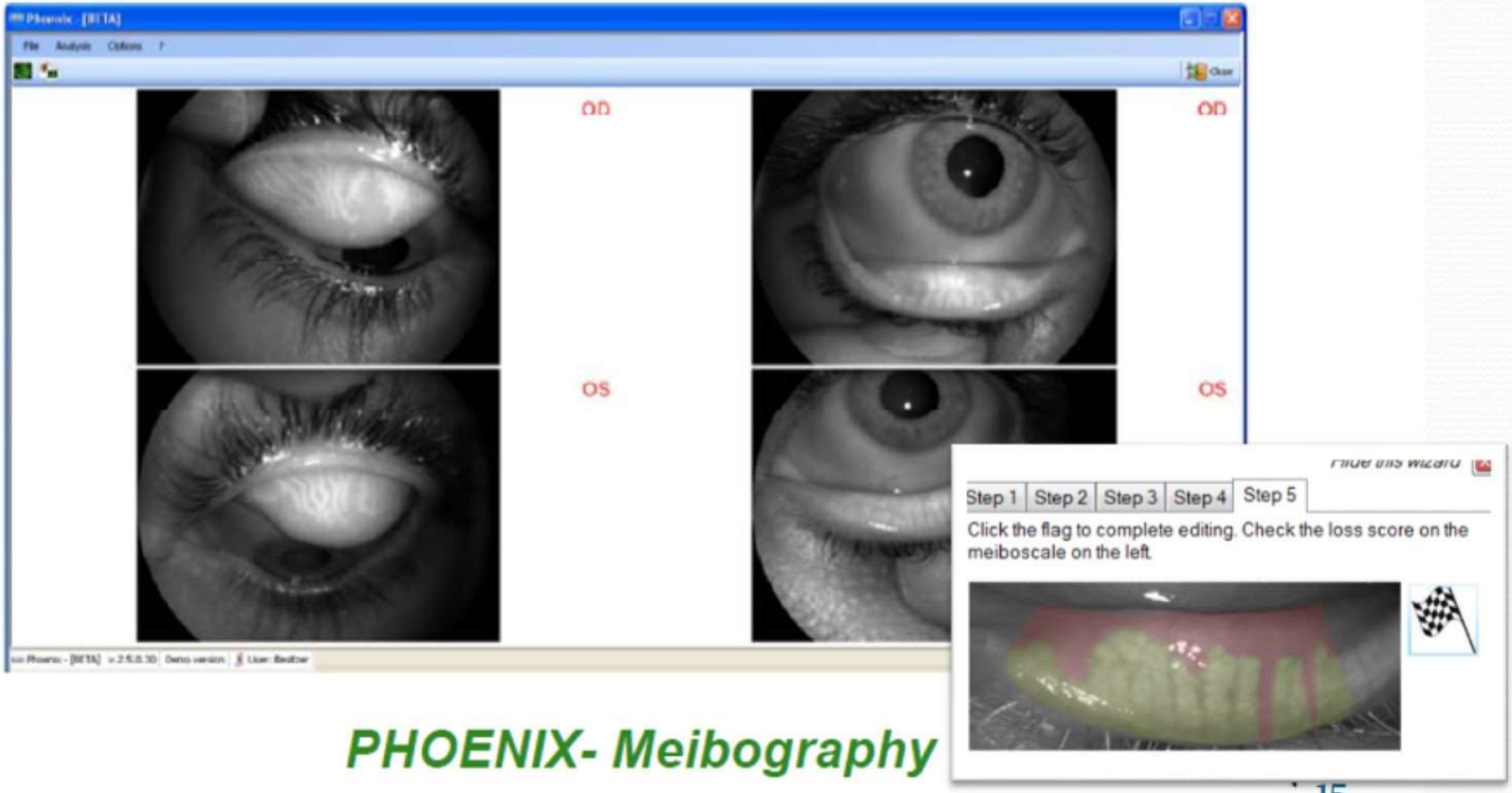




Upper and lower eyelid highlighted by infrared illumination

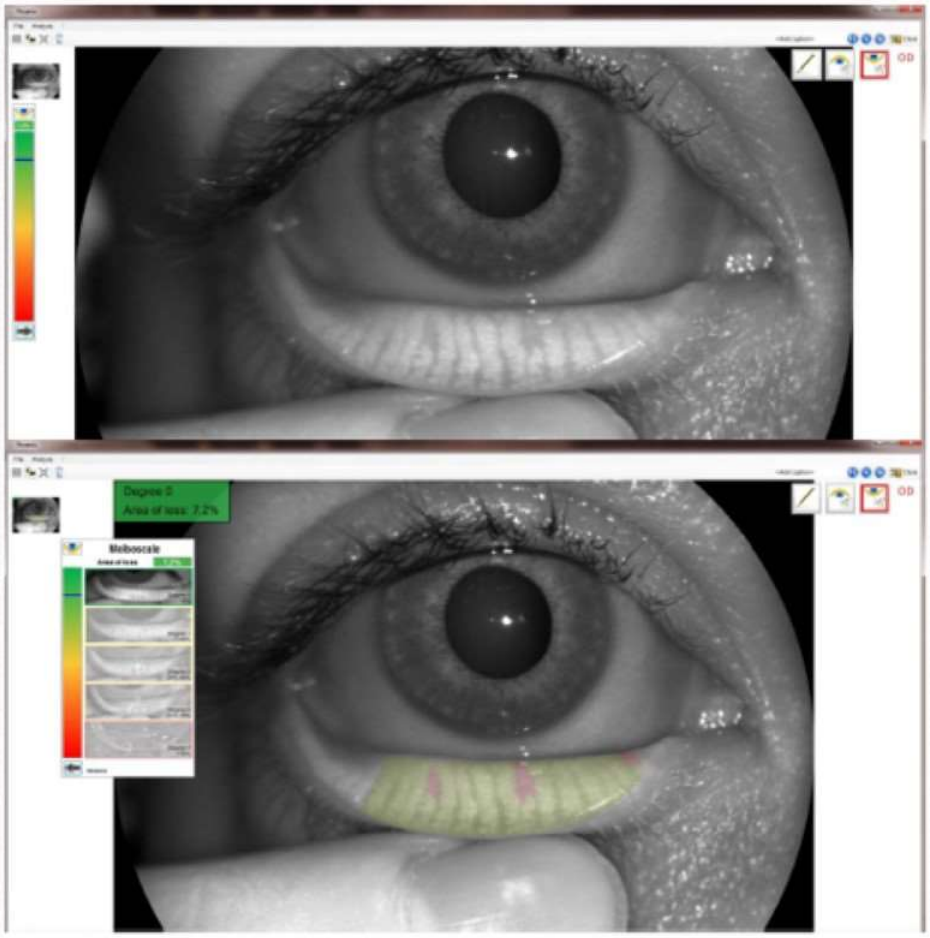
Phonix Meibography

Picture acquisition

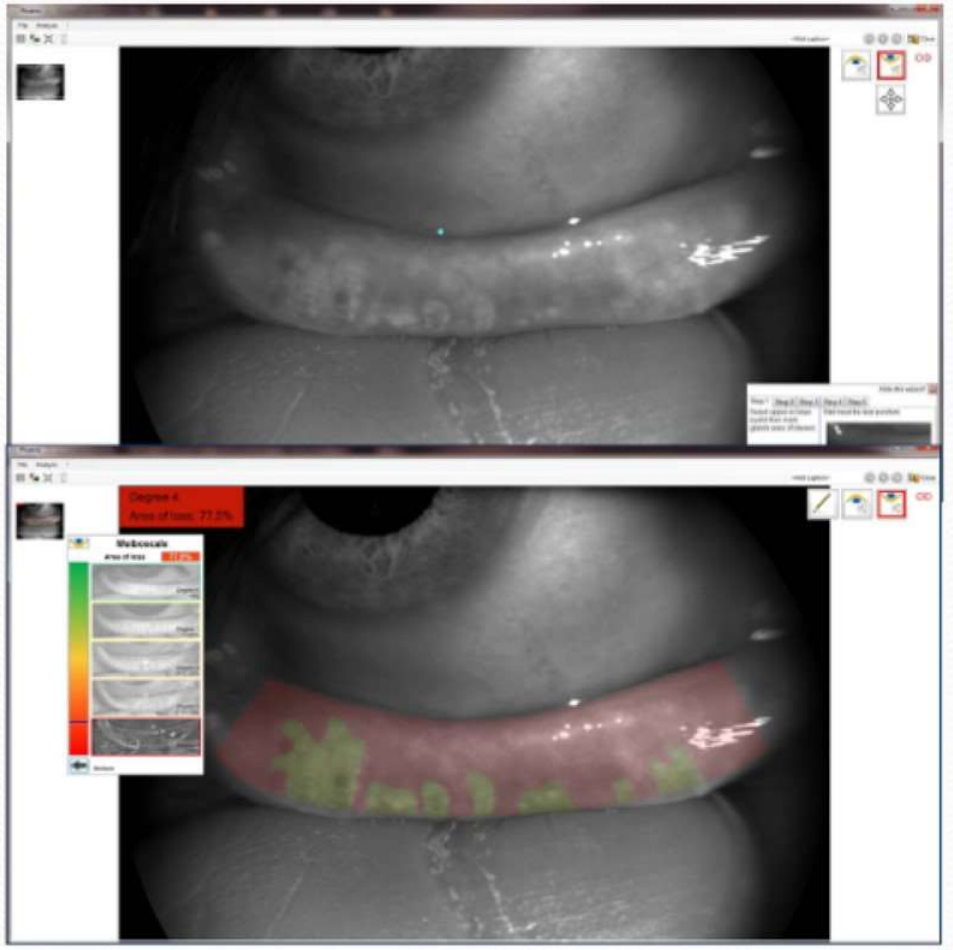


PHOENIX- Meibography

Phonix Meibography



7.1 Area of loss – Degree 1



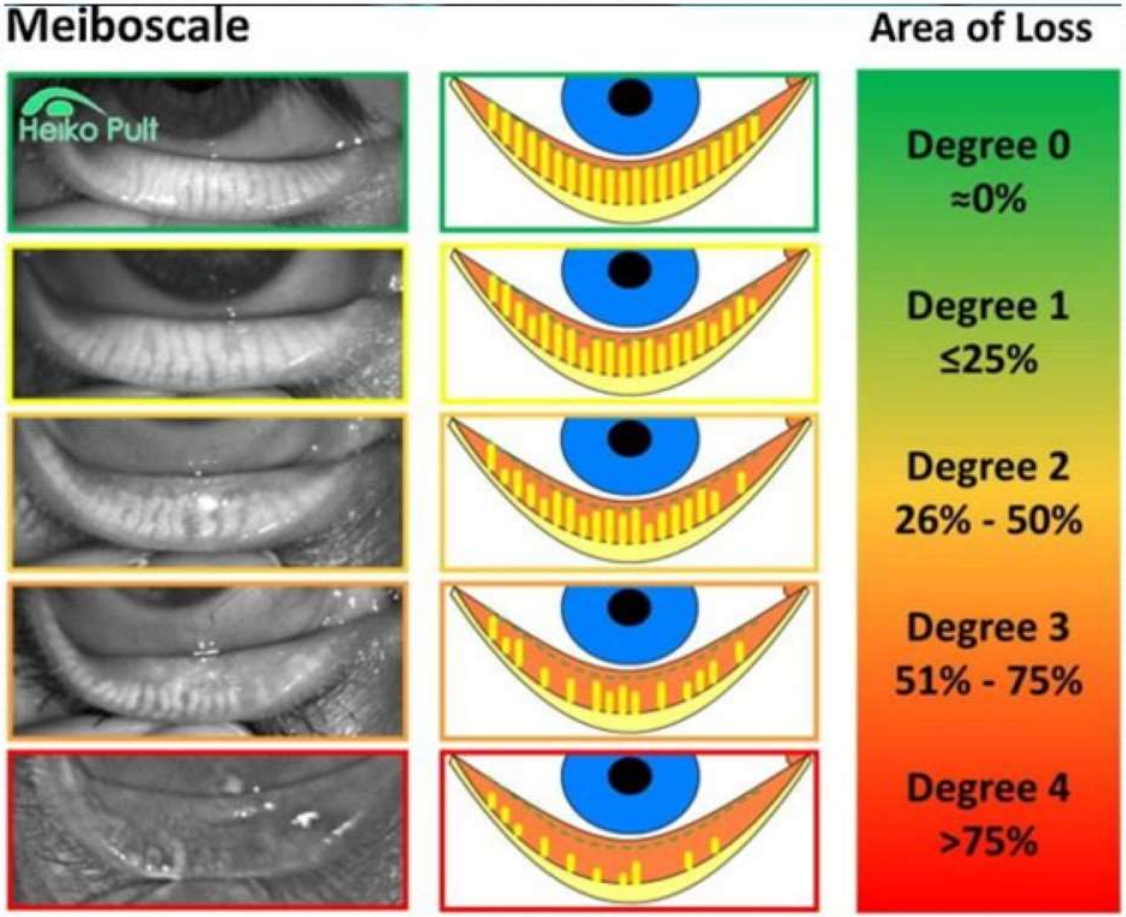
77.5 Area of loss – Degree 4

Phonix Meibography

Analysis of meibomian glands through

5 severity steps

grading scale



Diagnostics

Multifunctional instruments with built in IR-cameras

PHOENIX

- Osiris-T

Cobra HD

MS-39
AS-OCT

Siriu

POLARIS

THANKS