



Dry Eye Workshop

Michael S. Cooper, OD Susan Janik, OD
John Gelles, OD, FIAO, FCLSA, FSLs



Acknowledgements

- The content of this COPE Accredited CE Presentation was prepared independently without input from members of the ophthalmic community.
- There is no direct financial or proprietary interest in any companies, products or services mentioned in this presentation.
- The content and format of this course is presented without commercial bias and does not claim superiority of any commercial product or service.

Disclosures

- Dr. Cooper is affiliated with Allergan, Alcon Laboratories (Surgical Division), Takeda/Shire, EyeVance Pharmaceuticals, Quidel, Sight Sciences, BioTissue, Johnson & Johnson Vision Care/TearScience, Bausch + Lomb, Glaukos, Novabay Pharmaceuticals, and The Mentholatum Company as a consultant/speaker/researcher in the past 12 months.
- Dr Janik is affiliated with BioTissue, CooperVision and Takeda/Shire as a consultant/speaker in the past 12 months.
- Dr Gelles is affiliated with Avedro, Avellino Labs, Advanced Ophthalmic Systems, BioTissue, BostonSight, Blanchard Lab, Bausch + Lomb, Contamac, EyecareLive, EyePhotoDoc, Formulens, Google, PeerMed, STAPLE program, Synergeyes, Visionary Optics, and Visionix as a consultant/speaker/researcher in the past 12 months.

What + Why Treat OSD?

01 Address Signs/Symptoms

02 Improve CL Intolerance

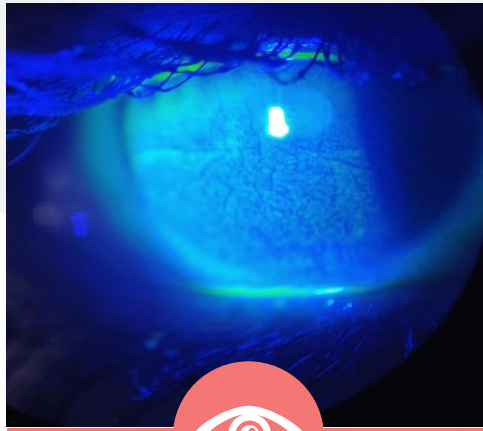
03 Improve Surgical Outcomes

04 Grow Your Practice



Provide Relief!

The Players



Dry Eye



Allergy



MGD



Blepharitis + Demodex

Everyone Wins!



Take a look at all the different angles



Patients!

Improved sensitivity and specificity of differential diagnosis using point of care testing



Doctors!

Increase patient satisfaction will increase word of mouth referrals for an under-recognized and under-treated condition



Practice: Income Diversity!

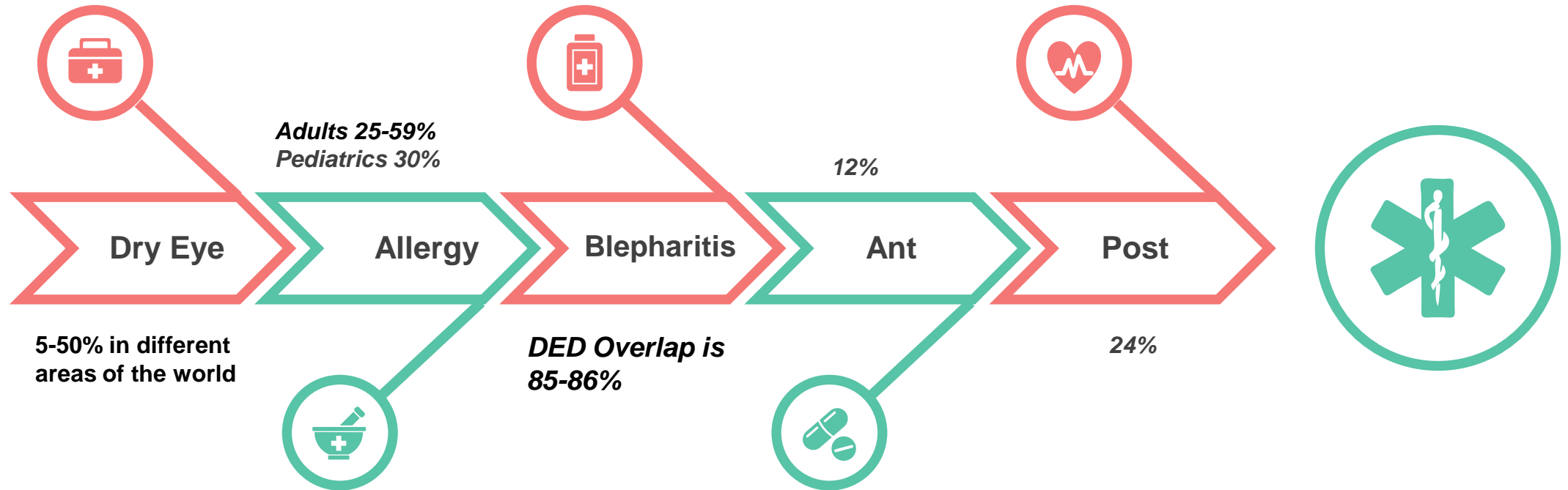
Mix of both insurance based and cash based services. With the decline in insurance reimbursement, cash based services increase revenue stream.



Insurers...

Treatments are specific to the diagnosis versus empirical treatment.

Epidemiology



What's worse...

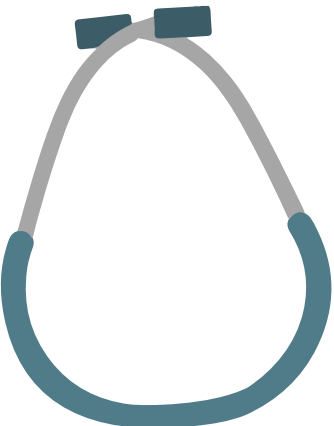
- The burden of DED on the US health care system is estimated to be almost \$4 billion
- Lost productivity > \$55 billion for overall US society

Impact of DEWS II

“Dry eye is a multifactorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiological roles.”



Screening



Frequency of watery eyes (r=0.48), discomfort (r=0.41), and dryness (r=0.35), and late day (PM) intensity of discomfort and dryness



DEQ5

Symptom Frequency and Severity

**0-4 Mild
5-7 Moderate
8+ Severe.**



SPEED

Assess DED symptoms in past week

**0-12 Normal
13-22 Mild
23-32 Moderate
33+ Severe**



OSDI

Pain Scale Assessment

**0 is mild to 10 is severe
end of spectrum**



UNC DEMS

What's your preference?!



CLDEQ



IDEEL



CANDEES



**Woman's Health
(Schaumburg)**

Lid Evaluation: What am I looking for?



Vascularization

Advancement beyond the Line of Marx (ULMS)

Manual Expression

Diagnostic vs. Therapeutic

Quality of Lid Secretion

Is it toothpaste, buttery, or somewhere in between?

Meibography

Transillumination vs. Dynamic Imaging

Lid Closure

Incomplete vs. Lagophthalmos

Tears, Tears, Tears

Tear Meniscus Height (TMH)

Normal average is 0.2-0.3 mm

*Any measurement lower would indicate a decreased tear volume

Tear break up time (TBUT)

Norm: 7-10 seconds

*Use NaFI strip

01



02



03



NaFI

Commonly used dye which highlights any break on the corneal epithelium caused by micro-abrasion or desiccation

*Look for patterns

04



Lissamine/Rose Bengal

Checks for devitalized cells on the conjunctiva and early signs of dry eye disease

*Can present sooner than NaFI staining

05

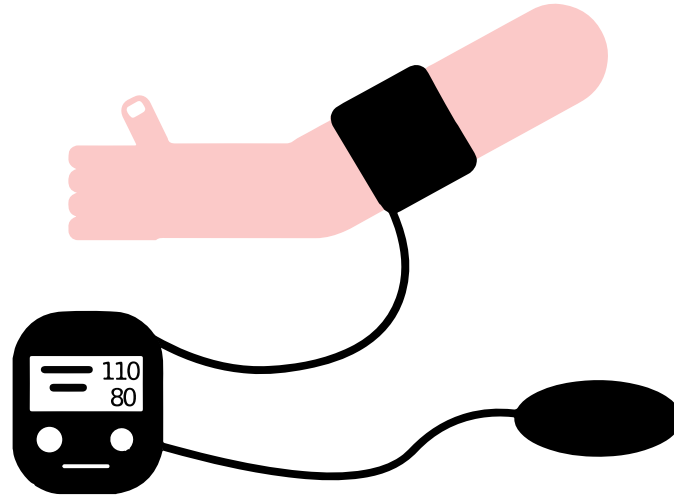


Schirmer / Red Thread Test

5 minutes time with 15 mm or greater in tear secretion being considered normal

*Reserve for those not so patients (joking)...

Point of Care



TearLab (Think Blood Sugar)

Measures homeostasis of the tears.

****Readings above 308 mosm or an inter-eye difference of >8 mosm are indications of hyperosmolarity and loss of homeostasis***

Quidel InflammaDry (Think A1c)

MMP-9 is a nonspecific inflammatory marker that has consistently been shown to be elevated in the tears of patients with dry eyes.

**** MMP-9 levels greater than 40 ng/ml can be detected indicative of a positive test***

Patients want instant gratification of their diagnosis AND their progress!

*****GET CLIA Waiver*****

IMAGING TECHNOLOGY

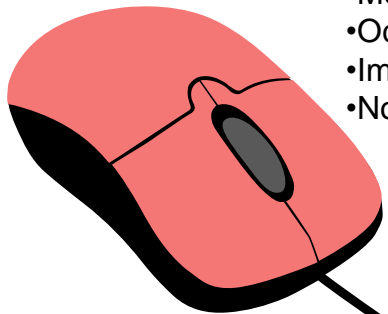
LipiView/LipiScan (Meibography)

- Dynamic illumination – surface lighting originates from multiple light sources to minimize reflection.
- Adaptive transillumination – Changes to the light intensity across the surface of the illuminator compensate for the lid thickness variations between patients



Oculus Keratograph 5M (corneal topographer with dry eye testing capabilities)

- Measures tear film height
- Ocular redness score
- Images Meibomian glands
- Noninvasive Keratograph Break up time





TF-Scan, R-scan

- White Placido-ring
- Infrared (IR) Placido-ring



Meibo-scan

- IR-LED spots



Imaging

- Blue-LED spots



TF-Scan

- White-LED spots



IMAGING TECHNOLOGY

Part 2

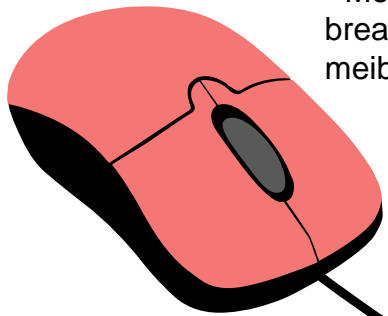
Meibox/Meibox Tower (Meibography)

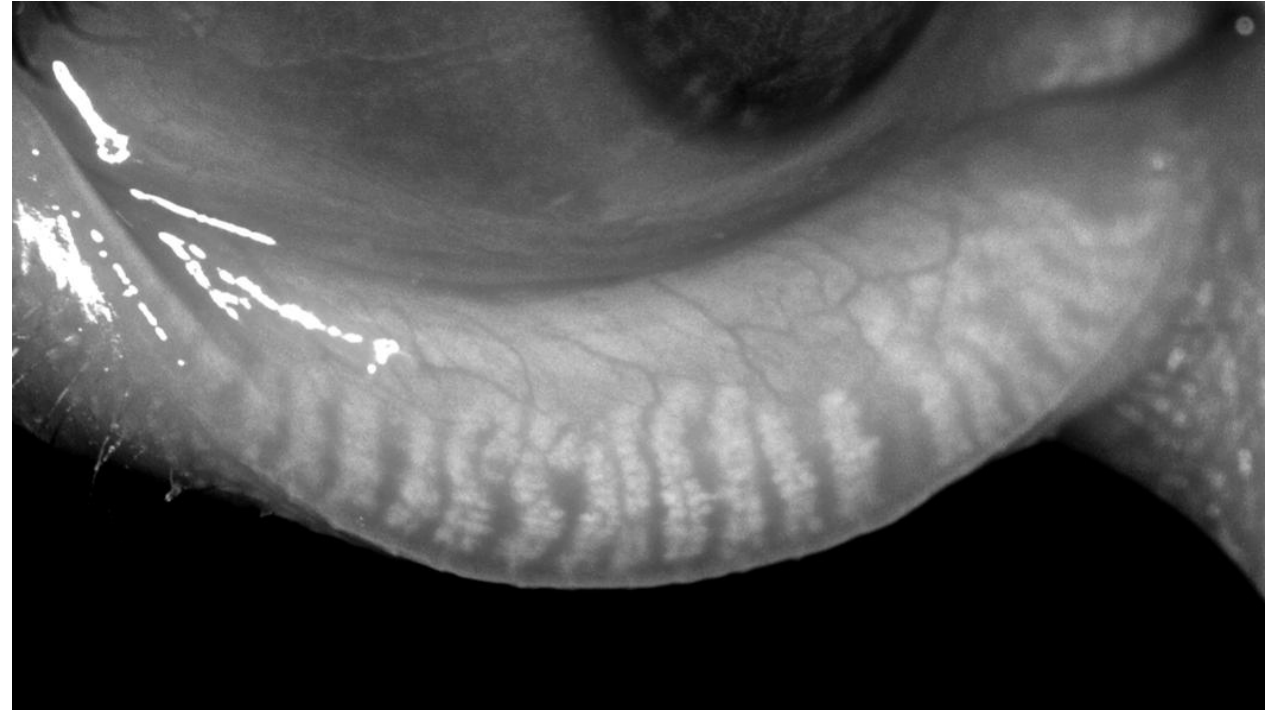
- The first HD slit lamp mounted meibographer that provides high resolution images of meibomian glands



Visiometrics (VBUT + Meibography)

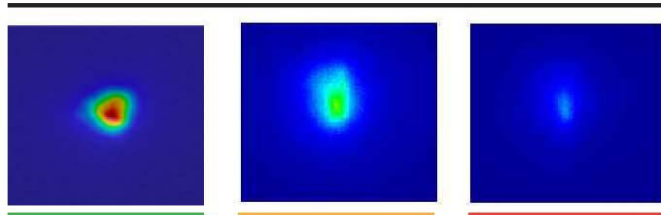
- Measures tear film stability evaluating the tear film breakup time using point spread functions and meibography



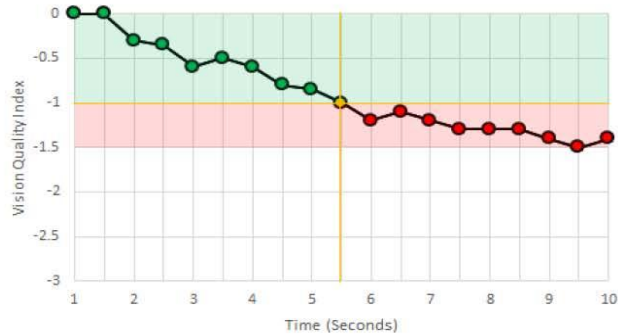


Vision Break-Up Time

5.5 sec



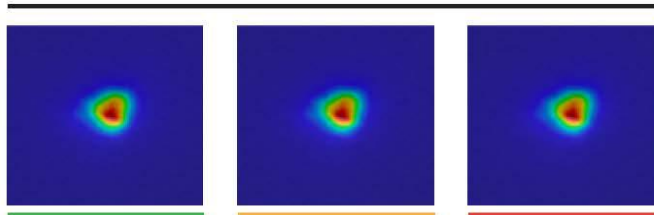
Best Vision VBUT Vision Worst Vision



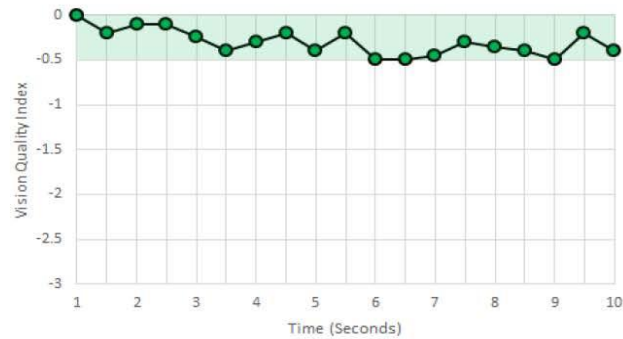
OD

OD Notes:

STABLE



Best Vision VBUT Vision Worst Vision



OS

OS Notes:



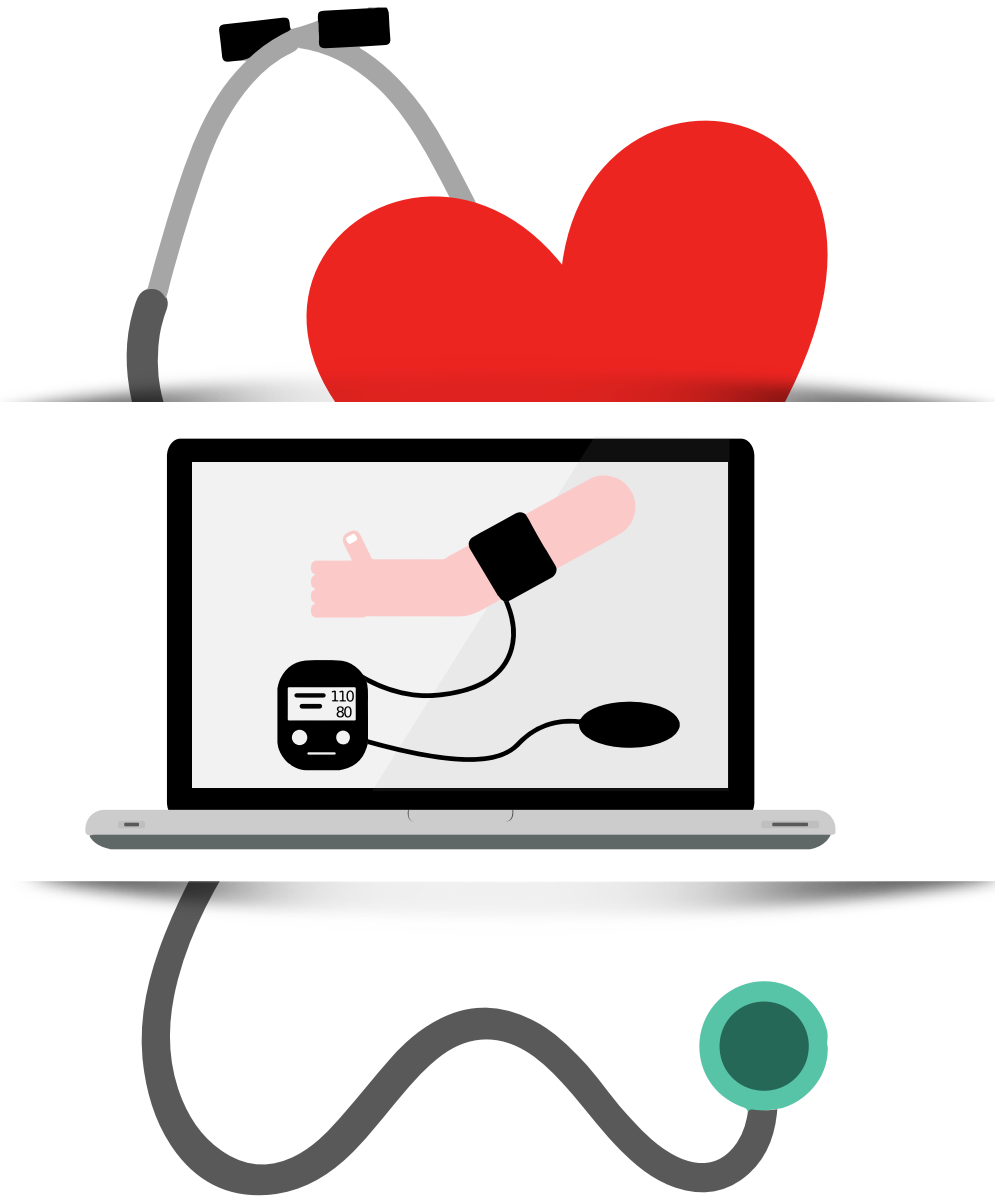
Other Diagnostic Considerations

Allergy Testing

- Indicated for patients with ocular and systemic allergies
- Many symptoms of ocular allergy and dry eye overlap
- Increase sensitivity and specificity of disease to provide targeted therapy
- Many patients take systemic antihistamines but may not be beneficial and/or warranted
- Tests are available from various companies
- Regionalized, proprietary panels of ocular-specific allergen
- Test is covered by major insurance plans
- FDA Approved
- No Needles or Shots
- Takes 3 minutes to perform with results in 10-15 minutes
- Integration with PCP/ENT/Allergists

Advanced Tear Diagnostics

- Measure both lactoferrin and IgE levels in the tear film



Punctal Plugs



Occludes the tear duct which carries tears away from the ocular surface

Commonly used for DED

Other Considerations

HSV, Glaucoma, Trauma (accident, surgical), Bell Palsy, ???

Materials, Supplies, Instruments

Material - Collagen / silicone / acrylic

Temporary versus permanent

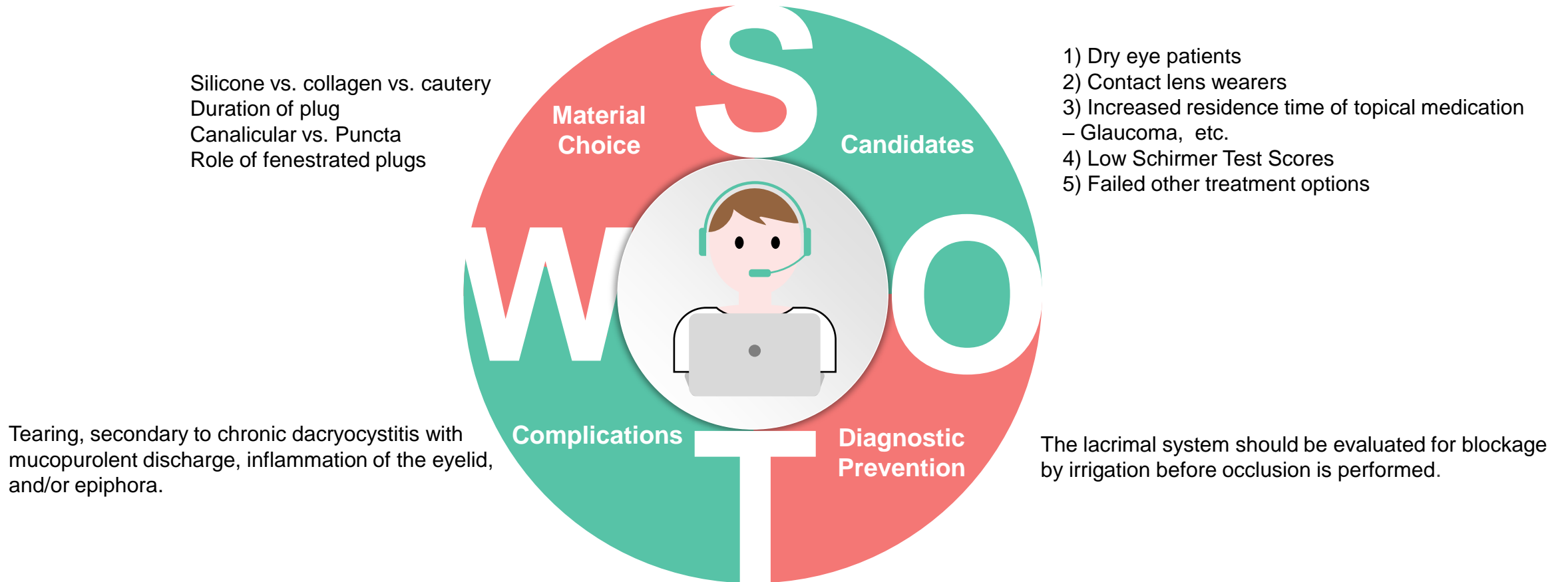
Forceps may be needed for loading and insertion

Loop versus slit lamp

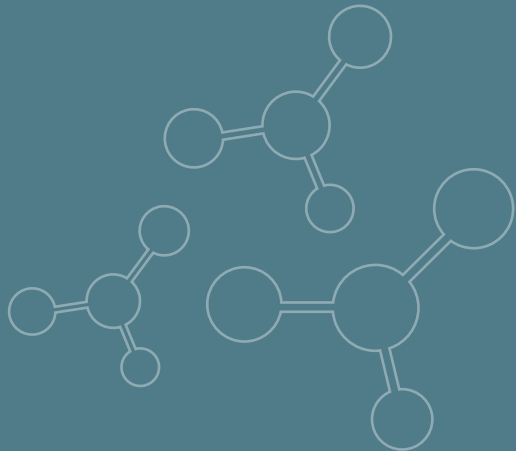
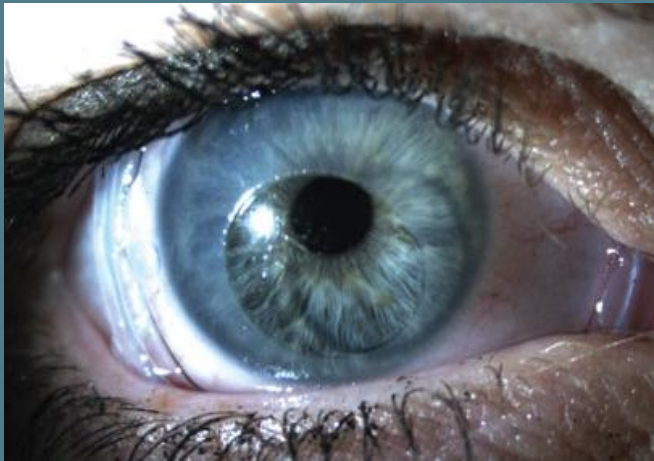
Currently Available Punctal Plugs on the Market

- a) Eagle Vision silicone punctum plug
- b) FCI silicone punctal plug(s)
- c) Herrick silicone canalicular plug
- d) Medennium thermo-plastic canalicular plug
- e) Oasis silicone punctum plug
- f) Paragon Bioteck
- g) Beaver-Visitec
- h) Odyssey silicone punctum plug

Stay In The Right Lane



Amniotic Membranes



Indicated for patients with moderate to severe dry eye



Increased sensitivity and specificity of disease to provide targeted therapy



Many patients have taken topical therapies, but may not have seen enough therapeutic benefit alone throughout treatment

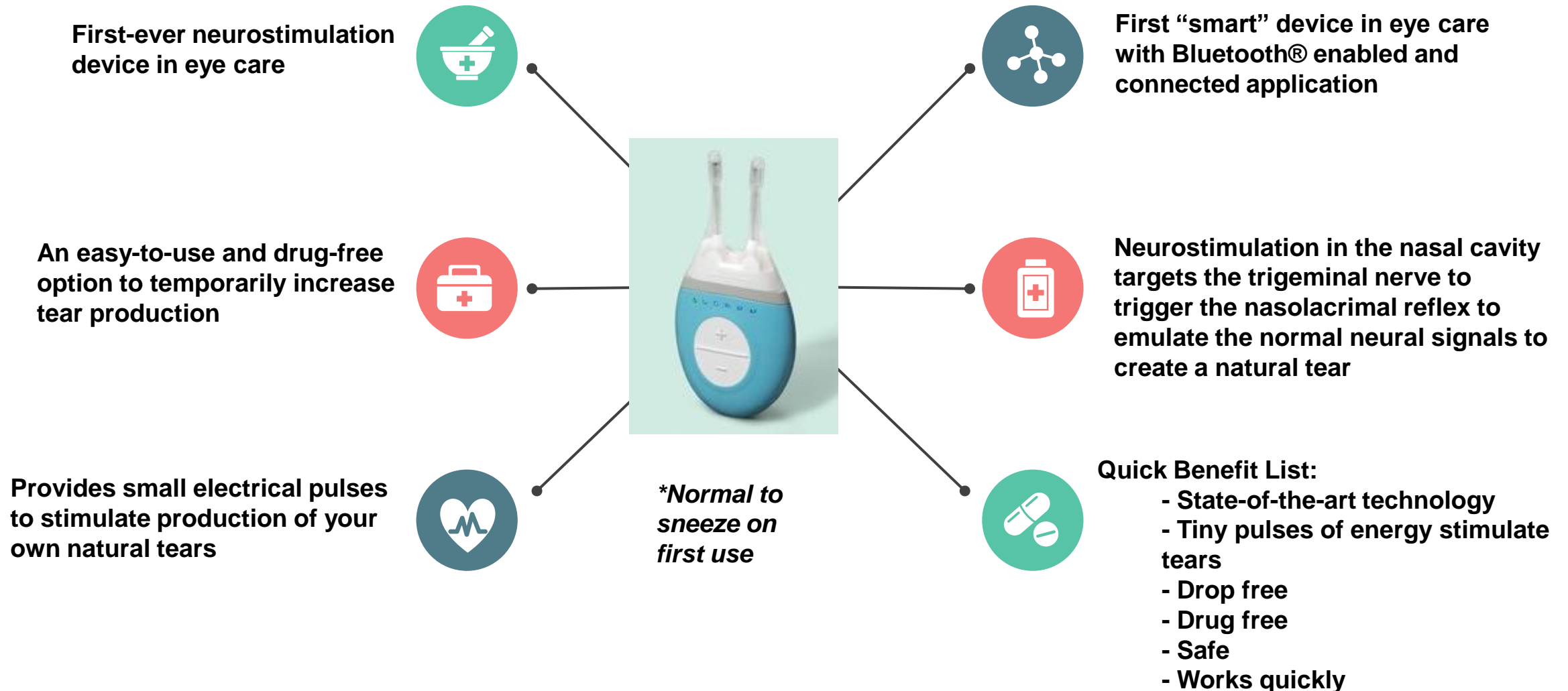


Cryopreserved or Dehydrated?

Currently Available Punctal Plugs On The Market

- a) Eagle Vision silicone punctum plug
- b) FCI silicone punctal plug(s)
- c) Herrick silicone canalicular plug
- d) Medennium thermo-plastic canalicular plug
- e) Oasis silicone punctum plug
- f) Paragon Bioteck
- g) Beaver-Visitec
- h) Odyssey silicone punctum plug

Neurostimulation



MGD Treatments



LipiFlow

Vector thermal pulsation technology to improve Meibomian gland structure and function



TearCare

Smart and compact thermal technology to improve Meibomian gland structure coupled with manual warm gland compression



iLux

Handheld thermal technology with yellow LED light delivers variable force on meibomian glandular apparatus to external lids



IPL

Non-laser, broad wavelength, high intensity flash of light that is applied using a handpiece that contacts the skin through a sapphire or quartz block

****IPL Sidebars****

The specific mechanism of action is not well understood, but is believed to be partially due to the thermal heating of the meibum coupled with the therapeutic effects of treating superficial telangiectasia. Energy is absorbed by skin chromophores, leading to lysis, causing only minimal collateral damage to neighboring cells.

**CT Scope: By the books, it's not a laser. It is the disposition of the OD to move forward with performing the procedure.*

Treatment and Management

Which is First?



**DED
or
MGD**

*Need to tease out signs and symptoms to determine root cause or if multi-variate

????

Insurance?



**Leverage covered
and noncovered
services**

*Price transparency is crucial, but do not short change your skill set

????

Protocol?



**Concise
Workflow**

*Establish appropriate expectations for staff and doctors to ensure proper technique and consistency of procedure

????

Trending?



Watch the data

*The body of literature continues to expand in this area, keep up to date with podcasts, journals, and live lectures

????

Thank You!

