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University of Colorado School of Medicine

Building Good Habits: Daily Eye Hygiene and Our Patients



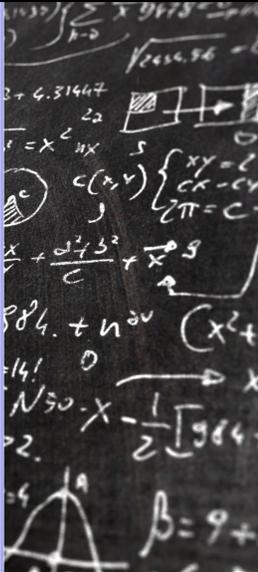
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Disclosures for Cecelia Koetting

*All relevant financial conflicts have been mitigated

- Ocular Therapeutix
- Glaukos
- Horizon
- Eyevance/Santen
- Ivantis
- Orasis
- Claris Bio
- Aldeyra
- Dompe
- RVL
- Oyster Point
- Allergan
- Alcon
- Visus
- Thea
- Bruder
- Glaukos
- B + L
- Kala
- Twenty/Twenty Therapeutics
- Myze
- Azura
- Scope
- Iveric Bio
- LENZ

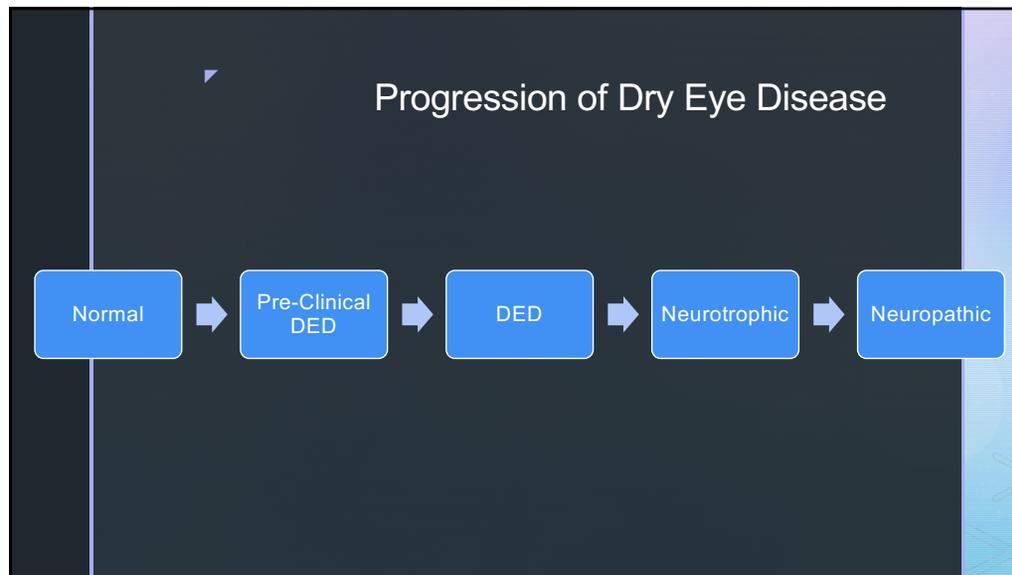
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TFOS DEWS II revised definition

"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."

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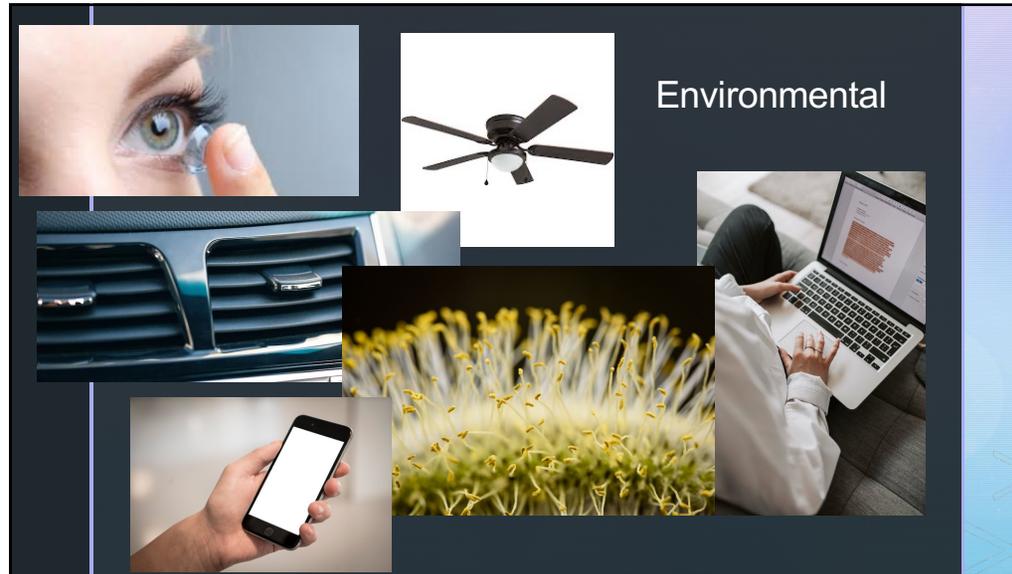
US PREVALENCE OF DRY EYE DISEASE

- Estimated >16 million patients have been diagnosed with DED¹
- Estimates ~33 million patients suffering from dry eye symptoms¹
- Almost all adults experience dry eye signs and symptoms
 - DED is often underdiagnosed and undertreated²
 - DED is the most common reason for visits to eyecare practitioners (ECPs)³
 - ~33% of patients present with complaints about dry eye¹
- Prevalence is projected to increase due to:
 - Aging population
 - Increased screen time (computers and handheld devices)

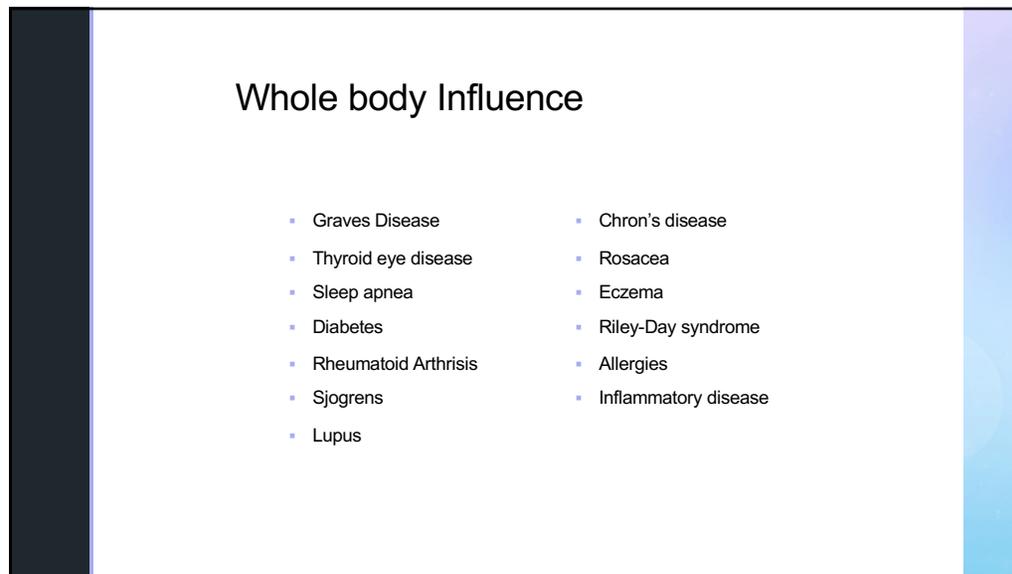


REFERENCES: 1. Farrand KF, Fridman M, Stillman IO, Schaumberg DA. Prevalence of Diagnosed Dry Eye Disease in the United States Among Adults Aged 18 Years and Older. *Am J Ophthalmol* 2017;182:90-8. 2. Craig JP, Nichols KK, Akpek EK, et al. TFOS DEWS II Definition and Classification report. *Ocul Surf*. 2017;15(3):276-283. doi: 10.1016/j.jtos.2017.05.008. 3. Casavant J, Ousler GW III, Wilcox-Hagberg K, et al. A correlation between the signs and symptoms of dry eye and the duration of dry eye diagnosis. *IOVS*. 2005;46:E-abstract 4455.

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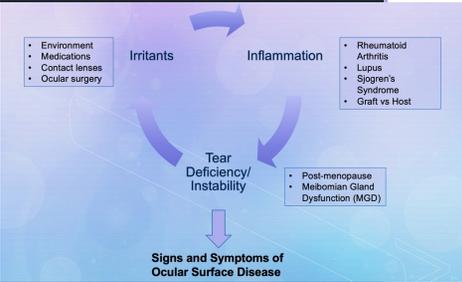


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Medications



- Ocular medications
 - Glaucoma drops
 - Preservatives
- Systemic medications
 - anti-depressants/anxiety
 - Sleeping pills
 - Pain relievers
- Parkinsons medications
- Chemotherapy
- Birth control and hormones
- Acne
- Allergy
- Diuretics
- Blood pressure medications

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Types of dry eye disease

Evaporative dry eye

- Resulting from excessive tear evaporation
- Evaporation leading to Tear hyperosmolarity
- Normally functioning lacrimal gland
- Eyelid related causes
 - Meibomian gland dysfunction
 - Inadequate lid closure/blink related

Aqueous deficient dry eye (ADDE)

- Resulting from from decreased tear secretion
- Hyper-evaporative state leading to tear hyperosmolarity

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Not mutually exclusive, it can be both!

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Before they enter the room

- Use your techs!
- Videos or materials in waiting room
- Emails and newsletters
- Questionnaires
 - SPEED
 - OSDI
- Multiple points of contact to start the discussion and engage the patient

SPEED™ QUESTIONNAIRE

Name: _____ Date: _____ Age: _____ Sex: _____ Ethnicity: _____

To the Florida Health System (FHS) and/or its affiliated hospitals, please answer the following questionnaire, checking the correct box regarding your prior, current and planned use of services.

1. Report the type of **SPEED™** you experience and when they occur:

Symptoms	At the visit		Within past 12 hours		Within past 3 months	
	Yes	No	Yes	No	Yes	No
Diagnosis, Discussion or Recommendation						
Education or Training						
Planning or Scheduling						
Other Topics						

2. Report the **FREQUENCY** of your symptoms using the rating below:

Symptoms	0	1	2	3	4
Diagnosis, Discussion or Recommendation					
Education or Training					
Planning or Scheduling					
Other Topics					

3. Report the **IMPACT** of your symptoms using the rating below:

Symptoms	0	1	2	3	4
Diagnosis, Discussion or Recommendation					
Education or Training					
Planning or Scheduling					
Other Topics					

0 = Not at all, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very Severe

4. Do you use any device for information? YES NO If yes, how often?

Use the following device: _____

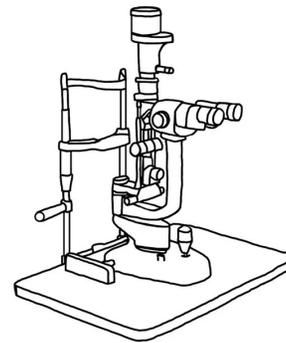
Total SPEED score (Frequency x Impact) = _____

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How do we determine the underlying causes?

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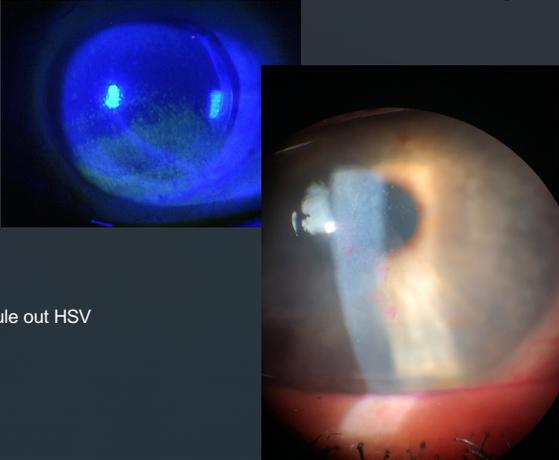
SLIT LAMP
EXAM!



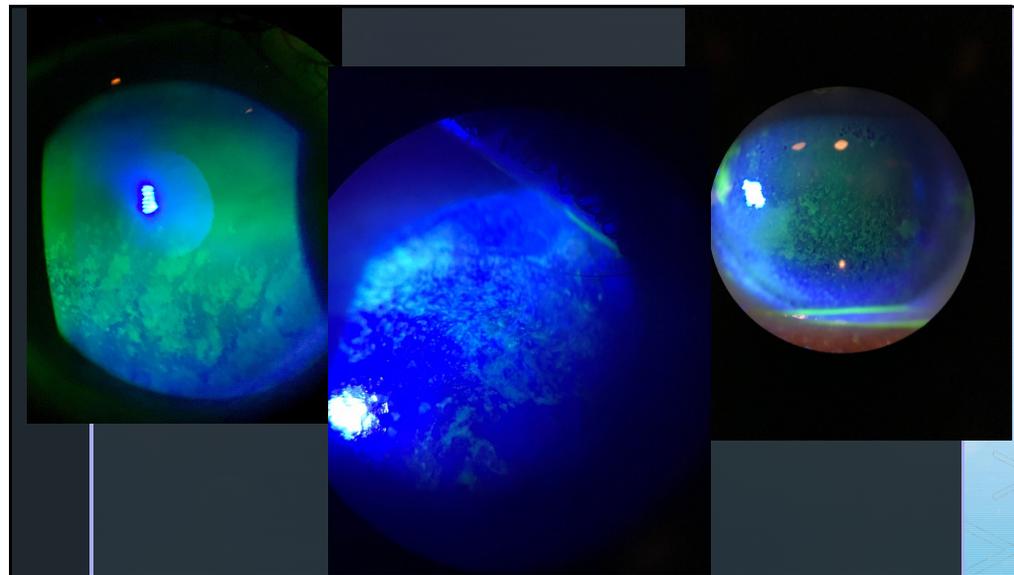
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Corneal Staining

- Sodium Fluorescein
 - Corneal staining
 - Pattern
 - Location
 - Severity
 - Tear break up time
 - Wratten #12 filter helps
- Rose Bengal
 - Corneal irregularities to rule out HSV



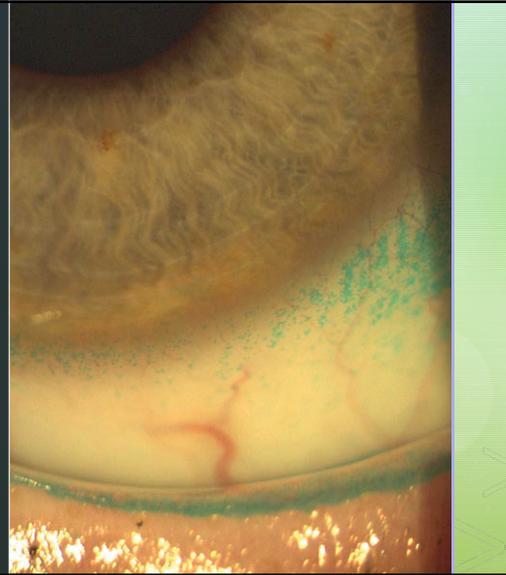
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Lid and Conjunctival Staining

- Lissamine Green
 - Stains dead and degenerate cells
 - Lid margin for lid wiper epitheliopathy
 - Conjunctival staining

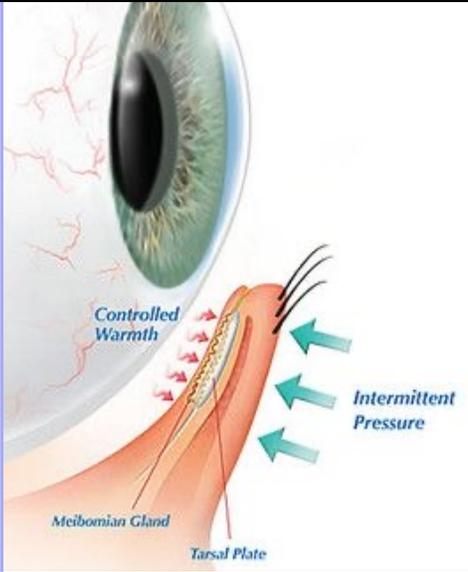


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Don't forget about The Eyelids



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The diagram illustrates the eyelid structure, focusing on the Meibomian glands and tarsal plate. It shows the eye, eyelid, and the glands. Red arrows labeled 'Controlled Warmth' point to the glands. Green arrows labeled 'Intermittent Pressure' point to the eyelid. Labels include 'Meibomian Gland' and 'Tarsal Plate'.

Meibomian glands

- Meibomian glands secrete the lipid layer of the tear film
- Meibomian gland dysfunction
 - Result of glands becoming clogged or atrophied
 - Leads to tear film disruption
 - Quicker evaporation of tears
 - Decreased tear break up time

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Grade the lid and gland appearance

- Any pitting?
- Any capping?
- Any lid structure abnormality?

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Express the glands

- Cotton tip applicator
- Your clean finger
- Gland expressor
- Meibomian gland evaluator
- **Just do it!**



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Meibomian gland compression

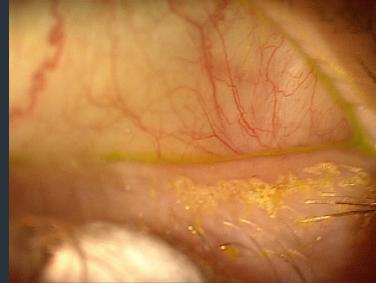
- Grade expressibility
- Meibum quality can be described as clear, cloudy, granular or inspissated, grading as follows:
 - Grade 1: olive oil, clear
 - Grade 2: turbid, cloudy
 - Grade 3: cloudy with debris
 - Grade 4: toothpaste-like, or inspissated



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Blepharitis and Demodex Blepharitis

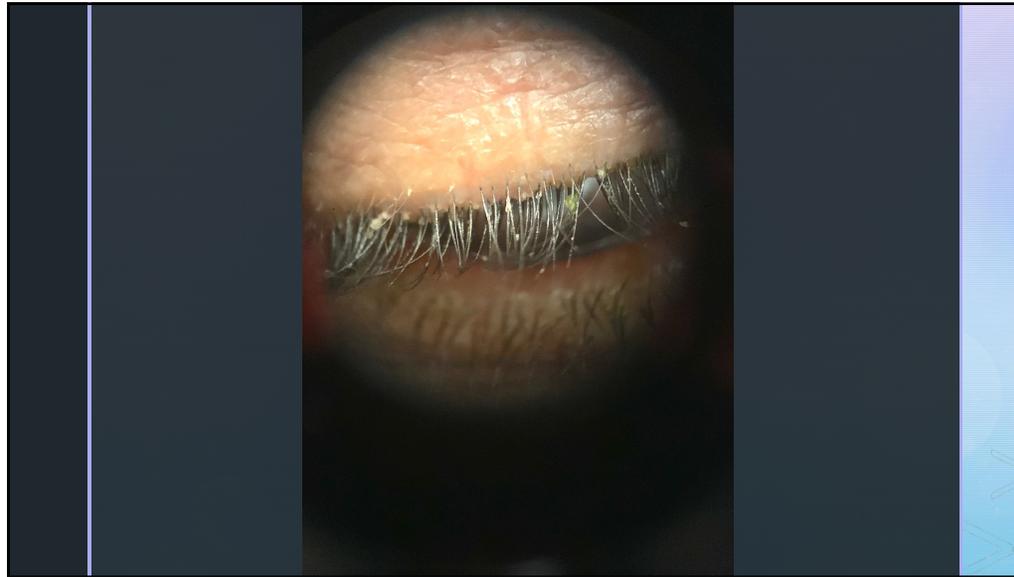
- Saponification
- Lid margin debris
- Lid margin biofilm
- Collarettes
- Telangiectasia
- Lid margin thickening



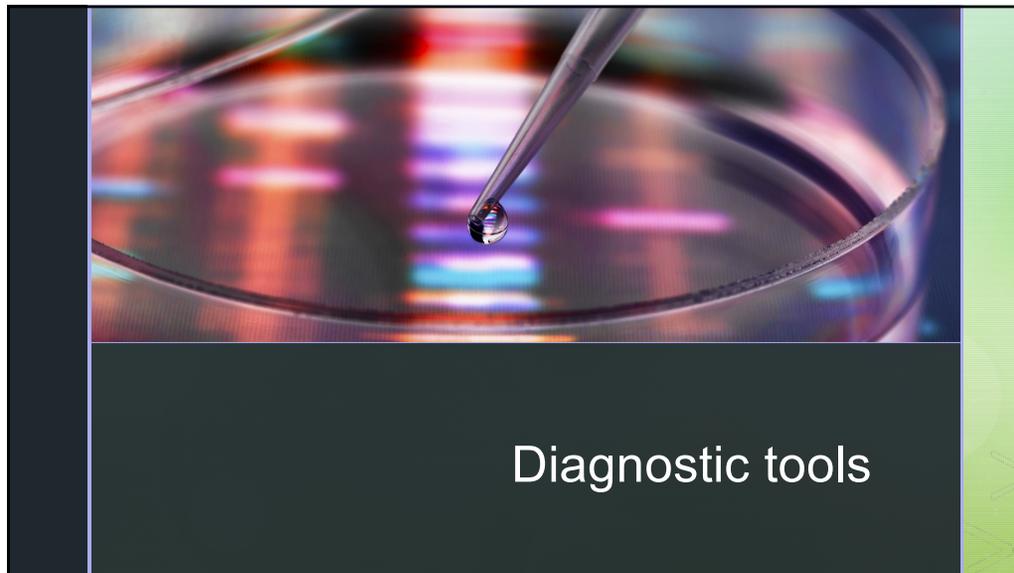
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Clinical Pearl: Have your patient look down to better identify demodex collarettes.

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Tear osmolarity

- Changes in osmolarity are caused by fluctuations in water content
 - Increased evaporation rate
 - Reduction in tear secretion
- Tear hyperosmolarity is a trigger for cascade of signaling events
 - Stimulates epithelial cell death
 - Leads to release of inflammatory cytokine production, cell death and loss of goblet cells
- Tearlab name change in 2022 to Trukera Medical



ScoutPro
Osmolarity System

Well-Lens™ Technology enables specimen collection and analysis all within the ScoutPro pen

Results displayed on pen right after testing with memory for recent results

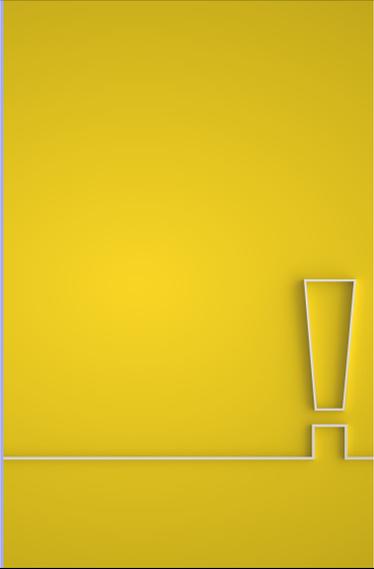
Rechargeable batteries in pen hold charge for 8 hours

Charging base has small footprint and optional wall mount

Test cards are interchangeable with first-generation osmolarity system

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The Winning Numbers Are.....



- Most accepted < 308mOsm/L threshold to diagnose dry eye
 - Normal vs early stages
- > 316mOsm/L is an indicator for mild vs moderate-severe dry eye
- Variability between repeat measurements increases with severity
- Variability between eyes (Lemp et al)
 - 6.9 ±5.9mOsm/L mild
 - 11.7 ±10.9mOsm/L moderate
 - 26.5 ±22.7mOsm/L severe

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MMP-9

- Released in the hyperosmolarity cascade
 - Is an inflammatory marker
- Current option Inflammady
 - Detects elevated levels of MMP-9 in tear fluid
 - At least 40ng/mL for positive test
- Qualitative, but not quantitative
- Rapid 10 min results
- Easy to use
- Low cost
- One time use



Study By Drs. Brujic and Kading

Making Matrix Metalloproteinase-9 Levels More Meaningful

Mile Brujic, OD, FAAO, David Kading, OD, FAAO

Introduction

Dry eye, and more broadly ocular surface disease, is a complex yet intriguing condition. In its simplest, we know that there are a number of changes that occur to the glands. These changes affect the quality of tears as well as cause chronic changes to occur to the ocular surface that the tear film supports. These are environmental changes that affect both comfort and visual quality of both contact lens and also non-contact lens wearers.

There are several inflammatory markers that are increased in the tear film of approximately 50% of dry eye patients. Chirkavskich et al showed that MMP-9 levels increase with increasing severity of dry eye disease. A new point of care diagnostic technology that detects an elevation of matrix metalloproteinase-9 (MMP-9) in the tear film is being coming an increasingly utilized test in eye care practice to help manage results of eye patients and contact lens wearers experiencing discomfort with their lenses.

It is a qualitative test that exhibits a red result line indicative of a positive result when the MMP-9 concentration in the tears is 40 ng/mL or higher. Although this gives us important qualitative information on the concentration of MMP-9 in the tear film, the signal strength of the red result line is directly proportional to the concentration of MMP-9 in the tears and can be used to estimate the relative amount of MMP-9 present. We have seen this clinically and we use it as a guide of how our treatment approach to the MMP-9 levels.

While the test cannot quantify the exact level of MMP-9 in the tear film, it provides a semi-quantitative method of grading the intensity of the inflammation in the tear film signal to assist clinicians in monitoring the success or failure of treatments with their patients.

Methods

Controlled samples of differing concentrations of MMP-9 were created and tested using the Inflammady test to produce positive results of varying strengths. The following concentrations of MMP-9 were tested:

- 8 ng/mL
- 16 ng/mL
- 32 ng/mL
- 64 ng/mL
- 128 ng/mL
- 256 ng/mL

Based on the varied intensities of the red result lines, a proposed signal strength classification was developed.

Results

The test result signal intensity was found to increase proportionally to the increasing concentration of MMP-9 present in the sample. This linear relationship allowed for the grading of the signal strength. A proposed signal strength classification was developed into one of five categories:

- Negative (0 ng/mL) - no red result line is present and the level of MMP-9 is below 40ng/mL.
- Trace positive (16 ng/mL) - the red result line is just detectable. This is at the lower level of the Inflammady test.
- Weak positive (64 ng/mL) - the red result line is a faint signal but stronger than the trace positive classification.
- Positive (128 ng/mL) - this red result line is relatively solid and easily visible.
- Strong positive (256 ng/mL) - this red result line is a strong signal and may appear vibrant.

Discussion

Understanding the relative concentration of MMP-9 levels in the tear film facilitates a more robust understanding of the dry eye disease state as well as enhancing clinical decisions. Prior to this proposed classification system, the test simply provided a positive or negative result depending on whether the red result line was present or absent. This essentially did not take the presence of either greater or less than 40 ng/mL of MMP-9 in the tears. Thus, if a patient has a 16 ng/mL dry eye measurement in

MMP-9 measurements wouldn't be appreciated unless the levels were from a positive to a negative.

There may be improvements to MMP-9 levels during treatment that can be graded by the intensity of the red line result. Although this doesn't quantify the absolute concentration, it does provide perspective on an additional measure to follow over time to demonstrate the success or failure of treatment. The concentrations were placed right beside the categories proposed above as a guide as to the appropriate concentration. Using that, it is impossible to infer the concentration of MMP-9 to that level of accuracy based on the subjective grading scale presented here.

What was also interesting is that although the published minimum detectable threshold of the Inflammady test is 40 ng/mL, a trace positive was actually detected at 32 ng/mL. The approach of interpreting a semi-quantitative result arms the clinician with additional information. This classification system provides a benefit as it allows the signal strength from a contemporary point of care test to guide the treatment of dry eye patients and those with contact lens comfort issues.

References

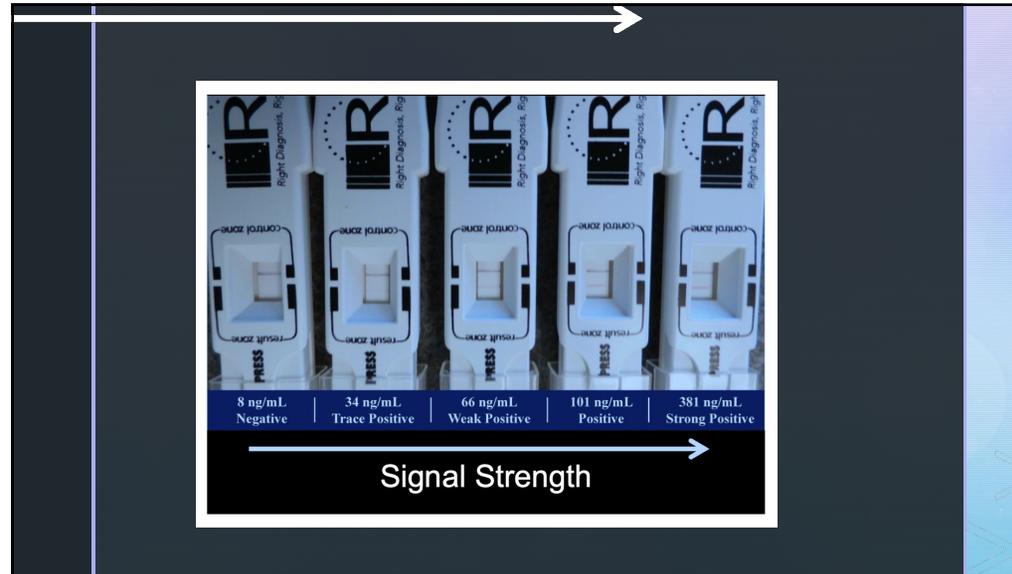
- Chirkavskich S, de Paiva CL, Li SH, et al. Invest Ophthalmol Vis Sci 2009; 50(7): 3203-3209.

Special Thanks

To RFS Diagnostic for providing support for this poster.



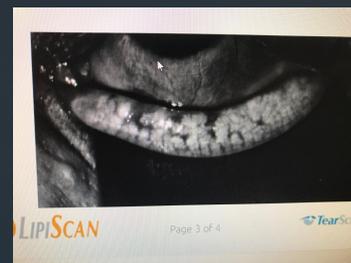
Figure 1. Inflammady test strips showing the variation in responses of the red line when tested against various concentrations of MMP-9. From left to right, the concentration of MMP-9 that was used for the respective tests were 8 ng/mL, 16 ng/mL, 64 ng/mL, 128 ng/mL, and 256 ng/mL.



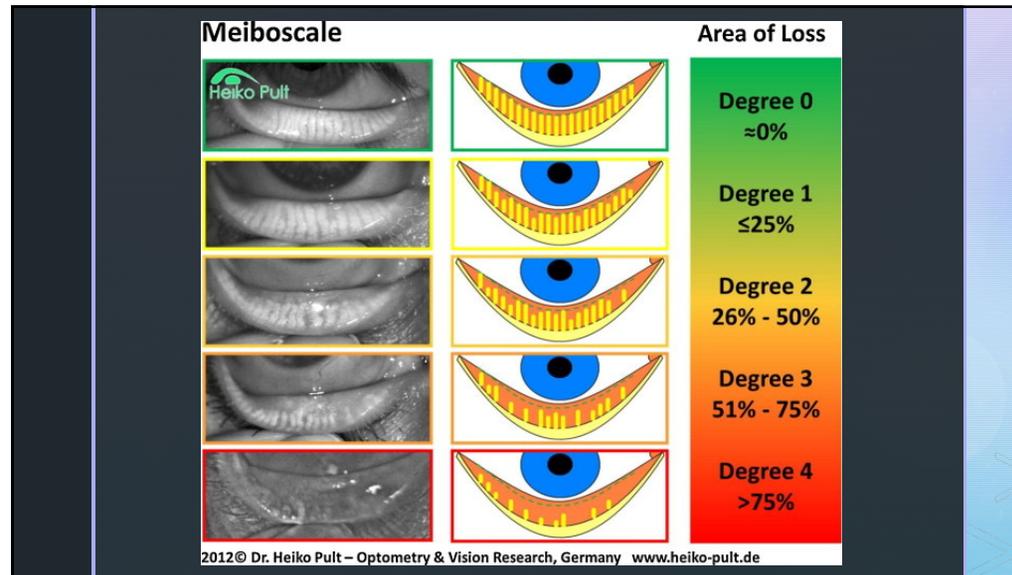
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Meibography

- Can look at meibomian gland structure with transilluminator or more accurately with meibography
- Infrared non contact viewing at the structure and health of the meibomian glands
 - Grading atrophy
 - Meiboscore
 - Grade 0 no atrophy
 - Grade 1 1-33%
 - Grade 2 34-66%
 - Grade 3 >66%



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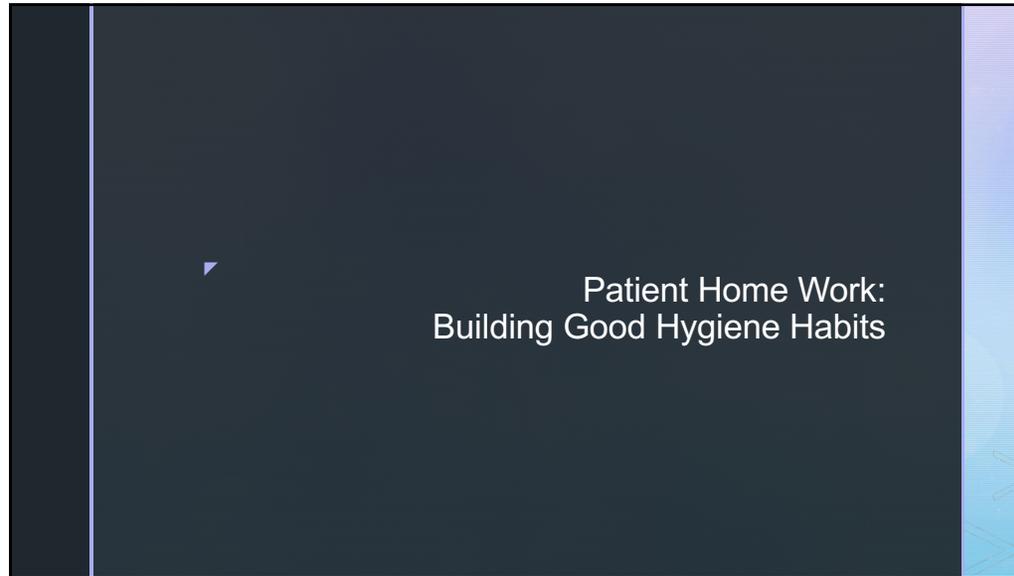


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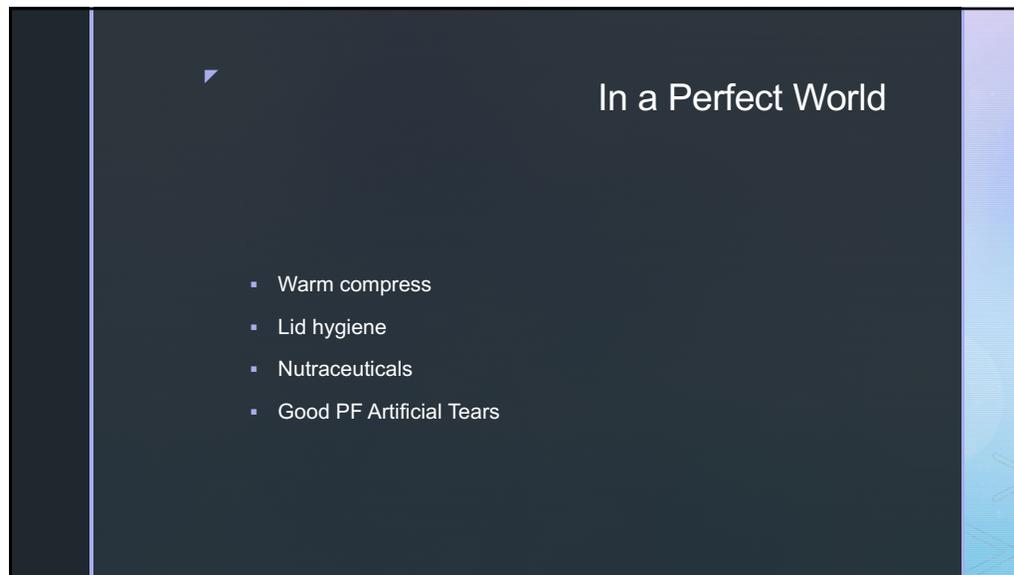
Pre-operative meibography study

- J&J sponsored study Koetting & Yeu pre-operative cataract retrospective
 - 95.1% patients had some level of gland atrophy
 - Only 4.9% showed no atrophy on meibography
 - Meibography vs SLE
 - More atrophy found on meibography vs the same patients SLE
 - Further breakdown found that there was a correlation between decreased expressibility of meibomian glands to increased meibomian gland atrophy, but NOT between meibum quality and MG atrophy

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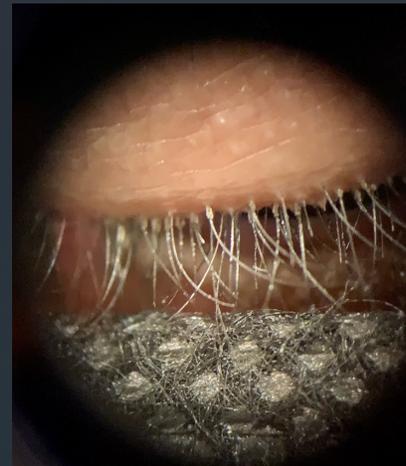
▶ Home Work: Yes, really, you should do it every day

- Warm compresses
- Good Preservative Free Artificial Tears
- Lid Hygiene
- Nutraceuticals

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- Day to day cleaning
- Control bacteria
 - Blepharitis
 - Demodex blepharitis



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What to Use?

- Lid scrubs cleaning
 - Foams, pads, sprays!
 - Coconut oil
 - Tea tree oil
 - Okra extract
 - HA

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What About Demodex Blepharitis Treatment

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DEMODEX BLEPHARITIS | Mechanisms of Disease

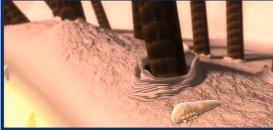
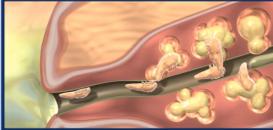




Image courtesy of Laura M. Peiman, MD, used with permission.

MECHANICAL

- Lash distension occurs as *Demodex* mites attach to follicles^{2,4}
- Demodex* mites deposit debris and digestive enzymes, causing further irritation to the eyelid margin^{4,5}

BACTERIAL

- Demodex* mites can contribute to blepharitis by carrying bacteria on their exterior surface that may elicit immune responses^{3,6-7}

CHEMICAL

- Demodex* mites have been associated with altered meibum composition⁸
- Debris from *Demodex* mites can potentially lead to chronic inflammation and degeneration of conjunctival tissue⁹

1. Data on file. Images courtesy of Laura M. Peiman, MD, 2022. 2. Zhang AC et al. *Ophthalmic Physiol Opt*. 2020;40(1):393-432. 3. Lu J et al. *Curr Opin Allergy Clin Immunol*. 2010;10(3):505-510. 4. Fromstein SR et al. *Clin Ophthalmol (Auckl)*. 2018;10:57-63. 5. Gao YY et al. *Invest Ophthalmol Vis Sci*. 2005;46(6):3089-3094. 6. Zhu M et al. *Front Microbiol*. 2018;9:1719. 7. Li J et al. *Ophthalmology*. 2010;117(5):870-877. 8. Gao H et al. *Transl Vis Sci Technol*. 2021;10(14):8. 9. Tarkowski W et al. *Biomed Res Int*. 2015;25:109.

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Warm Compresses

- Difficult to maintain the temperature needed
- Moist heat better
- Melting point of meibomian glands that are obstructed is higher
 - 40 degrees Celsius/106 Fahrenheit
- A study of subjects with MGD showed that 12 weeks of lid warming therapy resulted in a therapeutic benefit, with excess ocular surface phospholipase activity (which is detrimental to tear film stability) being reduced

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Options

- Thermal applicators for at home
 - Microwavable heat mask
 - Bruder vs others
 - Plug in warm compress
 - be careful!!!! Use with caution
 - Open eye mask
 - TearRestore
 - Heat mask and goggles with activators
 - Easier for travel or those who don't own microwave
- Heated cleaning pads
 - ThermaMEDx Evertears

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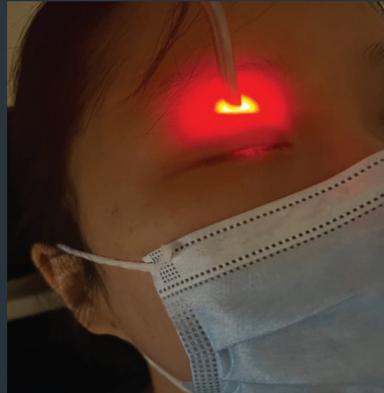
Sleeping: Eyelid Poor Seal, CPAP or Completely Open?

- Risks
 - Sleep Apnea
 - CPAP mask
 - Medications
 - Sleep Quality
 - Lid positioning and previous surgeries

- Treatments
 - Tap lids shut
 - Glade saran wrap?
 - Adhesive eye patch
 - Sleep goggles
 - Ointment

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Korb-Blackie test: Lid Seal



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Vitamin A ointment

- Vitamin A regulates the proliferation and differentiation of corneal epithelial cells,
 - Preserves conjunctival goblet cells
- Vitamin A is an essential nutrient present naturally in tear film of healthy eyes
- Vitamin A plays an important role in production of the mucin layer



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A comparison of vitamin a and cyclosporine a 0.05% eye drops for treatment of dry eye syndrome

Eun Chul Kim ¹, Jun-Sub Choi, Choun-Ki Joo

Affiliations + expand

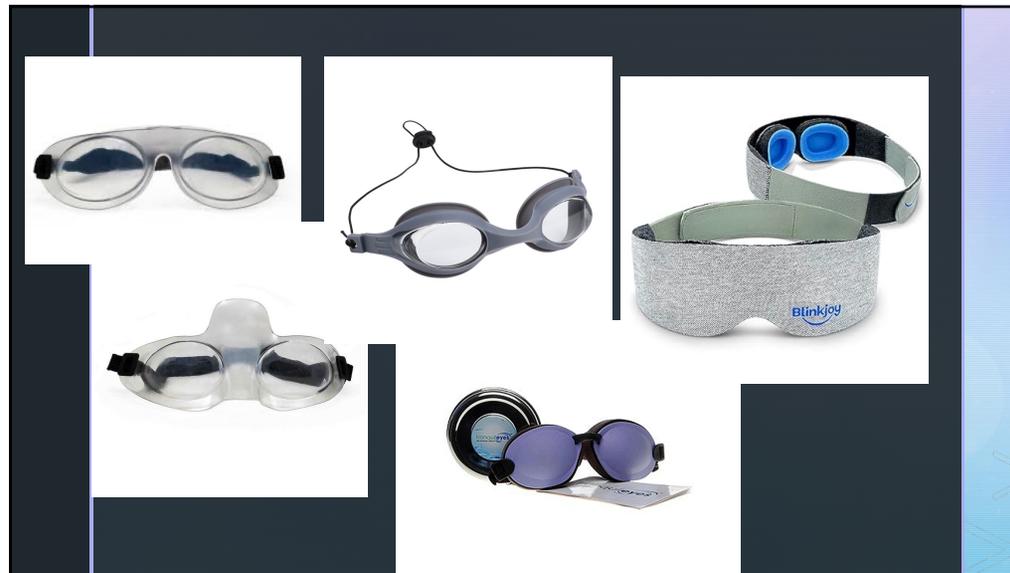
PMID: 18848318 DOI: 10.1016/j.ajo.2008.08.015

Abstract

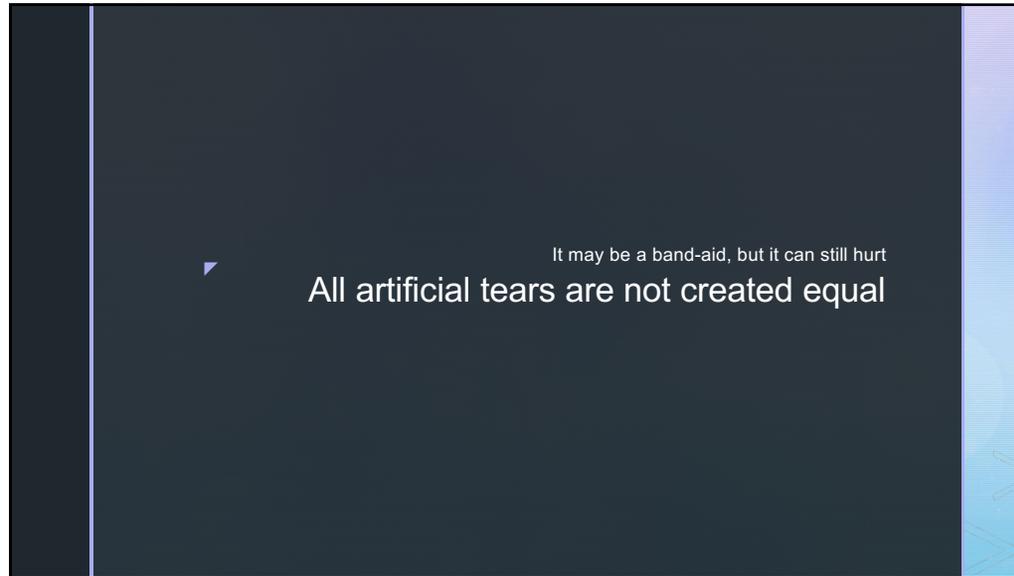
Purpose: To compare the efficacy of vitamin A (retinyl palmitate) and cyclosporine A 0.05% eye drops in treating patients with dry eye disease.

Results: Both vitamin A eye drops and topical cyclosporine A 0.05% treatments led to significant improvement in blurred vision, tear film BUT, Schirmer I score results, and impression cytologic findings in patients with dry eye syndrome ($P < .05$) compared to the control group treated with preservative-free artificial tears alone.

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FDA warns consumers not to purchase or use certain methylsulfonylmethane (MSM) eye drops due to contamination

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Update **[8/30/2023]** Dr. Berne's Whole Health Products voluntarily **recalled** Dr. Berne's MSM Drops 5% and 15% Solution Eye Drops due to bacterial and fungal contamination on August 26, 2023.

[8/22/2023] FDA is warning consumers not to purchase and to immediately stop using Dr. Berne's MSM Drops 5% Solution and LightEyez MSM Eye Drops – Eye Repair due to bacterial contamination, fun

Dr. Berne's products are dist products are distributed by I FDA recommends consumer contaminated eye drops coul which could possibly progres FDA is not aware of any adve this time. Patients who have

FDA warns consumers not to purchase or use EzriCare Artificial Tears due to potential contamination

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Update **[8/25/2023]** FDA is reminding the public that these recalled products should not be used, including off-label use in animals. FDA does not have direct knowledge of veterinary use of these products or of animal adverse events that are linked to the products; however, on August 14, 2023, the New Jersey Department of Health issued a [Health Alert Network message](#) calling for animal caretakers to immediately discontinue using EzriCare Artificial Tears, Delsam Pharma Artificial Tears, and Delsam Pharma Artificial Ointment on animal patients.

If you suspect that an animal under your care contracted an infection or serious side effects from these products, please report it to FDA: [How to Report Animal Drug and Device Side Effects and Product Problems](#).

Examples of microbial contaminants found in products:

Product	Bacterial contamination	Fungal contamination
Dr. Berne's MSM Drops 5% Solution	<i>Bacillus</i> , spp.	<i>Exophiala</i> , sp.
LightEyez MSM Eye Drops – Eye Repair	<i>Pseudomonas</i> , spp.; <i>Mycobacterium</i> , spp.; <i>Mycolicibacterium</i> , spp.; <i>Methylorubrum</i> , spp.	N/A

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List of eye drops recalled so far in 2023

- Dr. Berne's MSM Drops 5% Solution and LightEyez MSM Eye Drops–Eye Repair (August).**

 - The FDA issued a warning to consumers, noting that testing determined that the drops were not sterile and contained microbes. They also contained methylsulfonylmethane (MSM) as an active ingredient, which is unapproved for use in the U.S.
- EzriCare artificial tears (March).**

 - These drops were linked to a multistate outbreak of an extensively drug-resistant strain of *Pseudomonas aeruginosa*, per the [CDC](#).
- Delsam Pharma's artificial tears and ointment (March).**

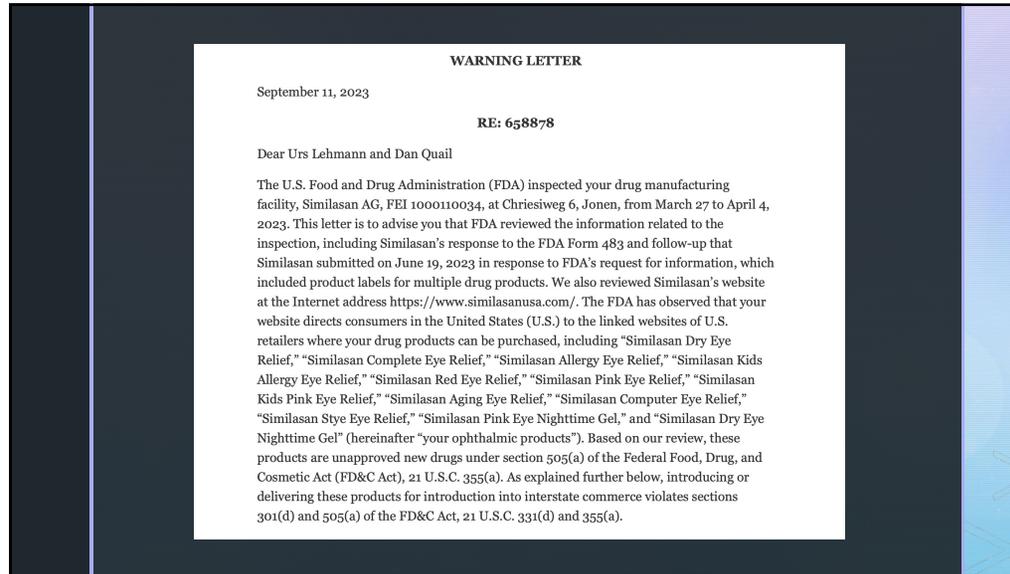
 - As a part of the same recall as EzriCare artificial tears, these drops were linked to a multistate outbreak of *Pseudomonas aeruginosa*, per the [CDC](#). "The outbreak is associated with multiple types of infections, including eye infections," the CDC noted in its initial warning
- Purely Soothing 15% MSM Drops (March).**

 - These drops were recalled after two lots were found to not be sterile. No illnesses were tied to the recall.
- Clear Eyes Once Daily, Eye Allergy Itch Relief (February).**

 - Teva Pharmaceuticals recalled select batches of the eye drop after they failed an impurities test. More than 700,000 bottles were recalled
- Brimonidine Tartrate Ophthalmic Solution, 0.15% (March).**

 - These eye drops, which are intended to be used by people with glaucoma or ocular hypertension, had faulty caps that could lead to unsterile solutions, the [FDA](#) noted.

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Things to consider

DO's	Don'ts
<ul style="list-style-type: none"> ▪ Suggest specific brands <ul style="list-style-type: none"> ▪ Give sample if possible or send Rx ▪ Preservative Free when appropriate ▪ Hyaluronic Acid ▪ Gels and ointments ▪ Lipid supplementing? 	<ul style="list-style-type: none"> ▪ Vasoconstrictors/redness relief ▪ BAK

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Hyaluronic acid

- Glycosaminoglycan
 - High molecular weight polysaccharide
 - In our connective tissue, synovial fluid, and AH and vitreous of the eye
- Ability to bind or retain water
 - Bind up to 1000 times its weight
- Viscoelasticity
 - Helps stabilize tear film
- Wound healing
 - Aids in epithelial cell proliferation, healing and migration
- Different molecular weights
 - Hold different amounts of water,
 - high weight holds more

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Trehalose



- Used frequently outside US
- Found in nature as a bioprotectant and osmoprotectant
- Helps to protect corneal cells from desiccation and high osmolarity
 - Fortifies the cell membrane
 - Prevents denaturation of proteins in the absence of water
- Schmid's 2015 trehalose-containing drops increased patients' tear film thickness as measured by OCT, after instillation of only one drop, up to 240 minutes compared with drops without trehalose

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HA + Trehalose VS. HA only

- Chiambaretta's 2017 study
- 3-6 x day 84 days with either hyaluronic acid (HA) with trehalose vs. HA only
- Questionnaires, Schirmer testing, tear film breakup time and conjunctival hyperemia scores
- The authors concluded that **HA with trehalose was more effective, and gave better patient satisfaction**

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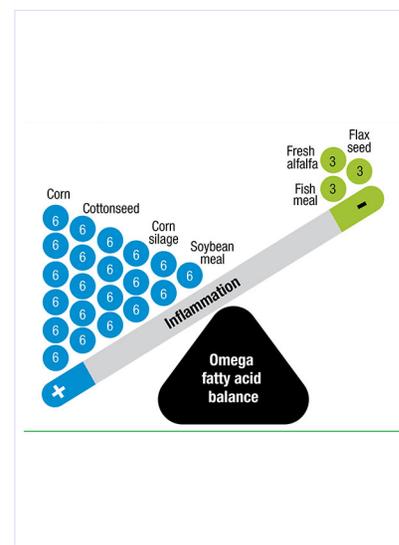


Balanced Diet

64

Omega 3 : Omega 6 Imbalance

- Want a 1:1 ratio
- Current diet heavy in Omega 6
 - Between 15:1 and 25:1 ratio



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Omega 3 FA Types

- Essential fatty acids
 - Omega 3
 - Long chain DHA/EPA (oily fish)
 - Short chain ALA (flaxseed, chia)
 - Help to reduce systemic inflammation
 - Too much Omega 6 = poor meibum quality
 - DHA/EPA ratio
- Remember not mandated by FDA
 - Independent groups evaluate



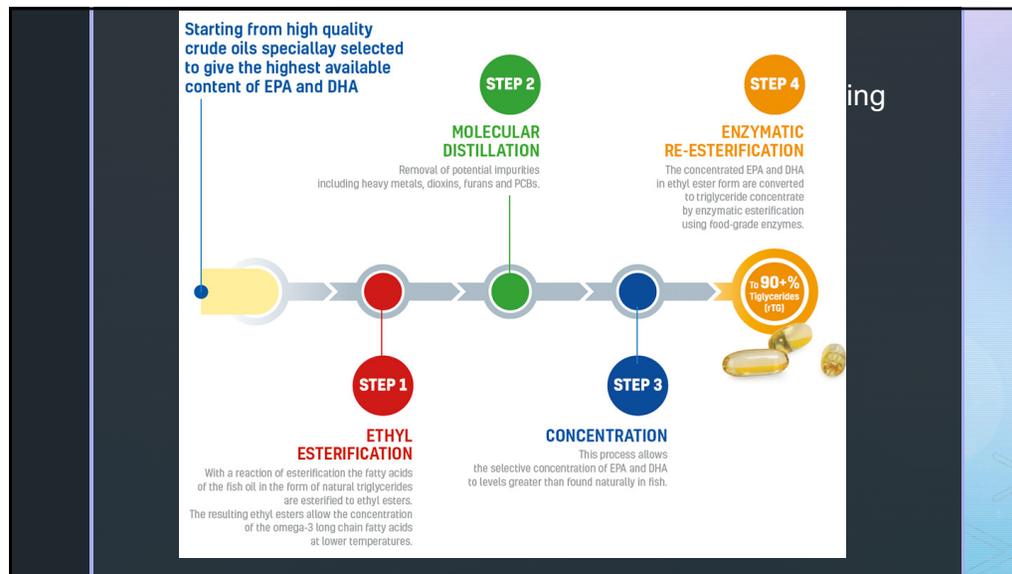
66



Trans ALA FA

- Prior to 2002 was contained in many foods including oil used to fry food.
- FDA recalled and reclassified this to be removed from our foods
- Showed and increased risk for heart issues and worsening of AMD

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A Few Tips

- What to look for:
- Quality: re-esterified TG fish oil
- Dosage: 1000-2000mg Omega 3 high EPA/DHA
- Avoid flaxseed in male patients
- ALA works too but has to convert

Supplement Facts	
Serving Size 1 Softgel	
Each Softgel Contains	% Daily Value
Calories 10	
Total Fat 1 g	2%
Cholesterol 0 mg	0%
Fish Oil 1000 mg	20%
Omega-3 Fatty Acids (EPA+DHA) 200 mg	40%
Other Omega-3 Fatty Acids 50 mg	10%

*Percent Daily Values are based on a 2,000 calorie diet.
**Daily Value not established.



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Makeup Suggestions?

- Start simple
 - Mascara – non waterproof and replace every 3 months
 - Liner- avoid tight lining
 - Good make up remover and lid cleaner
 - Same lid hygiene
 - Lash extensions- a whole lecture in itself
 - Start with promoting use of lid spray to keep clean – Optase Protect spray, Twenty Twenty lid hygiene spray
- Next Step
 - Suggest eye safe cosmetics and facial products
 - Eyes are the Story, Twenty/Twenty Beauty

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Because it matters

twenty
twenty
beauty

- If you want to be more involved, go a step further
 - Suggest specific eye friendly brands or carry them in office




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In office sales vs
Third party online

- Office size, foot print
- Decision making ability
- Profits to you?
 - In office sales
 - Amazon
 - Direct from manufacturer
 - DryEyeRescue
 - NEW Myze (free service to doctors)

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Sometimes Our Patients Need a Little Help from a Friend

79

Blepharo Exfoliation

Removes biofilm

- Can be used for blepharitis or demodex with different solutions
- Can improve expression of meibomian glands when coupled with thermal expression
- In patients with MGD, blepharitis, demodex and ocular rosacea exfoliation of the eyelid at the lash line helps to remove the inflammatory biofilm that causes chronic lid disease and discomfort.¹⁹

Blepharo exfoliation

- Blephex
- NuLids (at home)
- ILids



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Heat + Obstruction Removal

IMAGE COURTESY: SIGHT SCIENCES

MiBo ThermoFlo

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Intense Pulse Light

- Photothermolysis is one of the proposed mechanisms of action of IPL for dry eye
- Wavelengths selectively destroy blood vessels by targeting chromophores within the blood vessels
- Destruction of telangiectasias along the eyelid inhibits access of inflammatory mediators to the meibomian glands
- Other potential mechanisms include a mild local warming effect to allow better expression of meibum and destruction of bacteria that cause inflammation at the level of the meibomian glands.

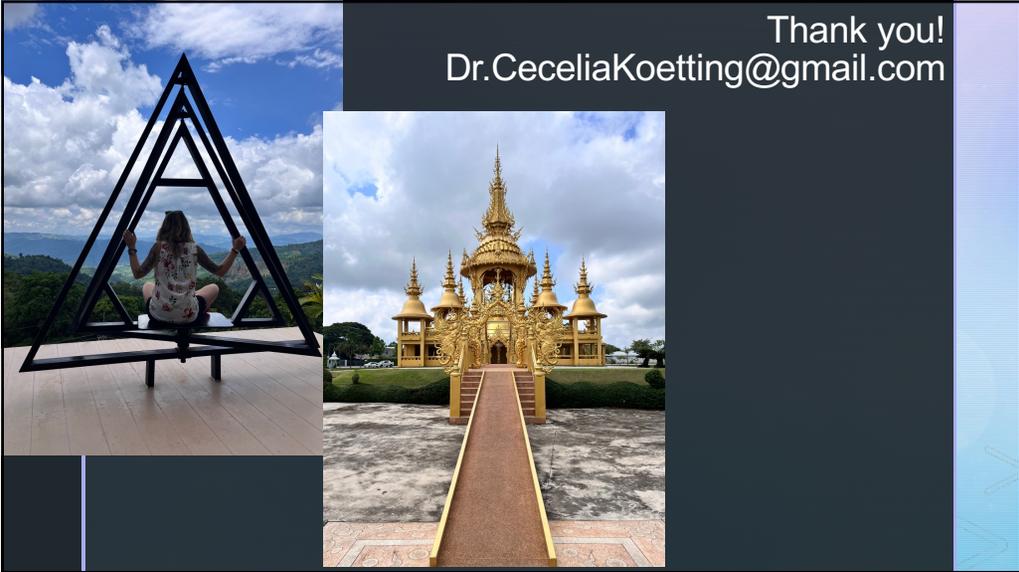
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Takeaways

- You have all the tools already!
- Have you patients look down to evaluate for demodex
- Don't get frustrated, there are always more options
- Get your patients involved in their treatment and DO THEIR HOMEWORK

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Thank you!
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