On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

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VISION EXPO

Drops vs Tears

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Disclosures

Milton Hom

last 12 months

allergan/abbvie
bausch health
novartis
sun pharma
kala pharma
tarsus pharma
hovione scientia
silk-tech

last 12 months

sydnexis
topcon
eyenovia bio
laboratoires Thea
aurinia pharma
eyevance pharma
surface pharma
nevakar, inc.
visus therapeutics

last 12 months

aperta biosciences
astareal, inc.
azura ophthalmics
aldeyra therapeutics
allysta
vyluma
nicox
ocuphire

Disclosures

Mahnia Madan

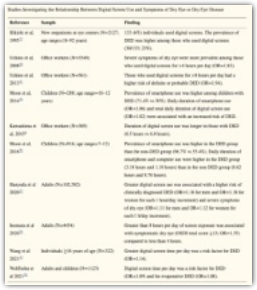
last 12 months

allergan/abbvie
alcon
bausch & lomb
sun pharma
labtician
thea
mye drop
Lumenis
Santeen
Zeiss

Drops vs.tears

- Screen time
- Tears
- Allergies
- Sleep

Screen associated dry eye



9 studies since iPhone

Al-Mohtaseb Z, Schachter S, Shen Lee B, Garlich J, Trattler W. The Relationship Between Dry Eye Disease and Digital Screen Use. Clin Ophthalmol. 2021 Sep 10;15:3811-3820. doi: 10.2147/OPTH.S321591. PMID: 34531649; PMCID: PMC8439964.

Screen time

"A commonly accepted hypothesis…is that digital screen use changes blinking dynamics, leading to ocular dryness."

Al-Mohtaseb Z, Schachter S, Shen Lee B, Garlich J, Trattler W. The Relationship Between Dry Eye Disease and Digital Screen Use. Clin Ophthalmol. 2021 Sep 10;15:3811-3820. doi: 10.2147/OPTH.S321591. PMID: 34531649; PMCID: PMC8439964.

Screen time

"millennials…are noticing increased symptoms of OSD, and they are presenting to our offices in higher numbers"

Hauswirth SG. Dry eye disease onset at a younger age. Optometry Times Journal, February digital edition 2022, Volume 14, Issue 2
https://www.optometrytimes.com/view/dry-eye-disease-onset-at-a-younger-age

Screen time

"their eyes generally feel worse at the end of the day after they have been on the computer for a long time."

Hauswirth SG. Dry eye disease onset at a younger age. Optometry Times Journal, February digital edition 2022, Volume 14, Issue 2
https://www.optometrytimes.com/view/dry-eye-disease-onset-at-a-younger-age

Pediatric dry eye

50% grades 7-12 during Covid (Thailand)
24.7% school age (China)
21.6% school children (Japan)

Tonkerdmongkol D, Poyomtip T, Poolsanam C, Watcharapalakorn A, Tawonkasiwattanakun P. Prevalence and associated factors for self-reported symptoms of dry eye among Thai school children during the COVID-19 outbreak. PLoS One. 2023 Apr 24;18(4):e0284928.
Villani E. Nucci P. Pediatric dry eye American Academy of Ophthalmology July 15 2020.
https://www.aao.org/education/disease-review/pediatric-dry-eye

Risk Factors

- Female sex
- Ocular allergies
- Underlying systemic diseases
  - congenital autoimmune
  - endocrine disorders
  - inflammatory conditions

Fiona Stapleton, Federico G. Velez, Charis Lau, James S. Wolffsohn,
Dry eye disease in the young: A narrative review, The Ocular Surface, Volume 31, ISSN 1542-0124,

Risk Factor - Screen Time

“Daily use of a smartphone was identified as an independent risk factor for DED, though researchers suggested that overall digital device use could be influenced by direct but related variables like time spent outdoors, sedentary lifestyles and impaired sleep”

Fiona Stapleton, Federico G. Velez, Charis Lau, James S. Wolffsohn,
Dry eye disease in the young: A narrative review, The Ocular Surface, Volume 31, ISSN 1542-0124,

Screen time

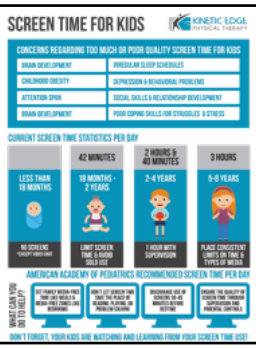
"Higher daily screen time is associated with lower cognition in children.”

Walsh, Jeremy & Barnes, Joel & Tremblay, Mark & Chaput, Jean-Philippe. (2020). Associations between duration and type of electronic screen use and cognition in US children. Computers in Human Behavior. 108. 106312. 10.1016/j.chb.2020.106312.

Screen time

"These findings suggest moderating screen-use for promoting cognitive development in children.”

Walsh, Jeremy & Barnes, Joel & Tremblay, Mark & Chaput, Jean-Philippe. (2020). Associations between duration and type of electronic screen use and cognition in US children. Computers in Human Behavior. 108. 106312. 10.1016/j.chb.2020.106312.



Pediatric dry eye

Drug	Age	Brand
Cyclosporine	16 years+	Restasis/Cequa
Lifitigrast	17 years+	Xiidra
Perflurohexyloctane	18 years+	Miebo
Loteprednol	18 years+	Eysuvis
Varenicline	18 years+	Tyrvaya
Cyclosporine/Perflurohexyloctane	18 years+	Vevye

Pediatric dry eye

Drug	Age	Brand
Cyclosporine 0.1%	4 Years	Verkazia
Loteprednol	Birth	Lotemax gel

Treatment

"There is little research on the safety and efficacy of DED treatment options in children."

Fiona Stapleton, Federico G. Velez, Charis Lau, James S. Wolffsohn,
Dry eye disease in the young: A narrative review, The Ocular Surface, Volume 31, ISSN 1542-0124

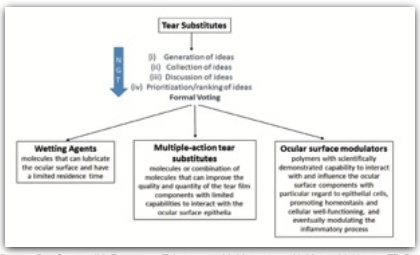
The forgotten option: Artificial tears

Artificial tears

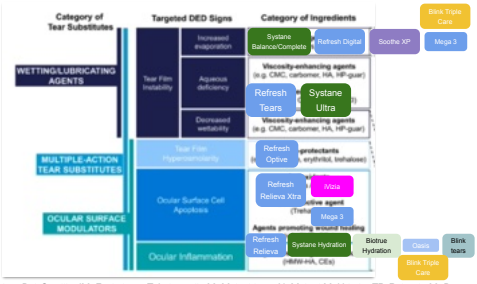
1. Availability
2. Cost
3. Save the Big guns

4. Confusion
5. They are all the same
6. Not as effective?

European NGT Classification



Barabino S, Benitez-Del-Castillo JM, Fuchsluger T, Labetoulle M, Malachkova N, Meloni M, Utheim TP, Rolando M. Dry eye disease treatment: the role of tear substitutes, their future, and an updated classification. Eur Rev Med Pharmacol Sci. 2020 Sep;24(17):8642-8652. doi: 10.26355/eurrev_202009_22801. PMID: 32964952.

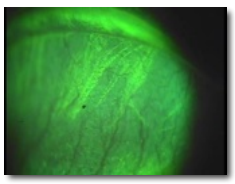
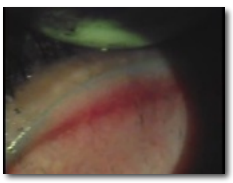


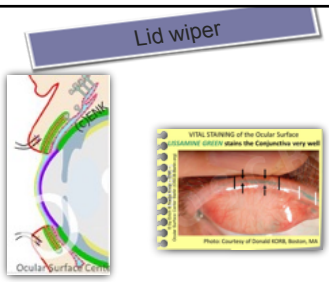
Barabino S, Benitez-Del-Castillo JM, Fuchsluger T, Labetoulle M, Malachkova N, Meloni M, Utheim TP, Rolando M. Dry eye disease treatment: the role of tear substitutes, their future, and an updated classification. Eur Rev Med Pharmacol Sci. 2020 Sep;24(17):8642-8652. doi: 10.26355/eurrev_202009_22801. PMID: 32964952.

Case: Lid wiper epitheliopathy (LWE)

Case: CL dryness
22 year old hispanic female
OSDI: 45.83
Frequency of dryness score: Moderate
Normal meibomian secretion

Case: CL dryness

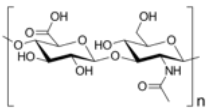


Erich Knop https://oscb-berlin.org/diagnosis-4

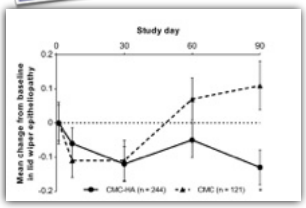
Treatment

Steroids
Artificial tear?

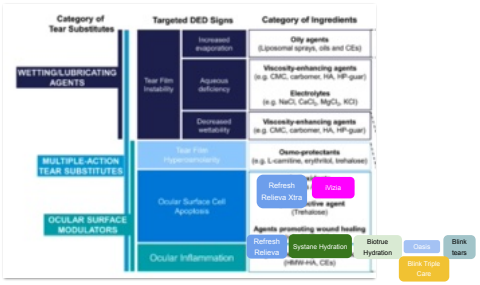
Hyaluronate acid (HA)



Relieva



Nichols JJ, Lievens CW, Bloomenstein MR, Liu H, Simmons P, Vehige J. Dual-Polymer Drops, Contact Lens Comfort, and Lid Wiper Epitheliopathy. Optom Vis Sci. 2016;93(8):979–986. doi:10.1097/OPX.0000000000000878



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Case - 16 YOB CK

CC: Dry eyes for many months. Notes redness, tearing, puffy eyelids, burning and light sensitivity. Interested in IPL

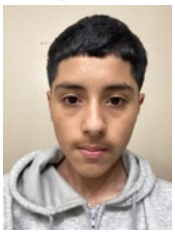
"Unable to function at school, can't look at screens or do homework"

Parents are very worried. Seen multiple doctors

Referred to Rheumatology for investigation of autoimmune disorders causing dry eyes

Tx: PFAT Q30min, hot compresses QID, Omega 3 and had multiple RF treatments with no help.

Hx: Many hours on screens, goes to bed between 1-3 am, anxiety, ADHD, adderall 5mg, atomoxetine 20mg



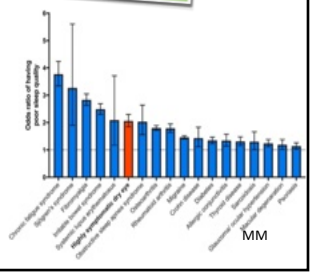
Sleep

"Nearly 30% of adults and 60% of adolescents in the United States fail to obtain sufficient amounts of sleep."

Li, S., Ning, K., Zhou, J. *et al.* Sleep deprivation disrupts the lacrimal system and induces dry eye disease. *Exp Mol Med* 50, e451 (2018). https://doi.org/10.1038/emm.2017.285

Sleep Deprivation & DED

- Poor sleep = 50% more likely to suffer from DED
- Sleep disorders are particularly pronounced in patients with dry eyes
- Highly symptomatic DED was rated as one of the top 5 conditions to reduce quality of sleep

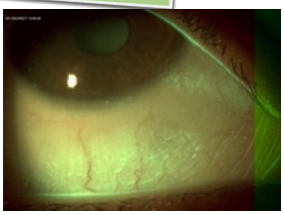


Magno MS, Utheim TP, Snieder H, Hammond CJ, Vehof J. The relationship between dry eye and sleep quality. Ocul Surf. 2021 Apr;20:13-19

MM

Patient

Patient



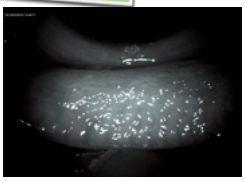
Patient

- 60% of symptomatic DED patients had compromised lid closure due to eyelid malposition
- "If you are treating a patient's ocular surface but not addressing lid closure, you are fighting an uphill battle by treating the inflammation without treating its cause"

Korb D, Blackie C, Nau A. Prevalence of compromised lid seal in symptomatic refractory dry eye patients and asymptomatic patients. *Invest Ophthalmol Vis Sci.* 2017;58:2696

AC and DED Epidemic

- Allergic Conjunctivitis and DED thought to be the epidemics of 21st century.
- Up to 40% of the general US population has reported ocular symptoms consistent with AC.

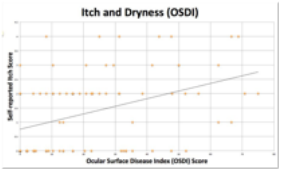


Dry eye syndrome and allergic conjunctivitis--epidemics of XXI century--diagnostic problems and management]. Przegl Lek. 2009;66(11):967-71. Polish. PMID: 20297640

Hom MM, Nguyen AL, Bielory L. Allergic conjunctivitis and dry eye syndrome. Ann Allergy Asthma Immunol. 2012 Mar;108(3):163-6. doi: 10.1016/j.anai.2012.01.006

AC and DED Epidemic

- As AC symptoms increase, DED symptoms also increase
- Lower tear volume increases concentration of irritants/ inflammatory factors
- Do eyes itch when they are watery or when they are dry?



Hom MM, Nguyen AL, Bielory L. Allergic conjunctivitis and dry eye syndrome. Ann Allergy Asthma Immunol. 2012 Mar;108(3):163-6. doi: 10.1016/j.anai.2012.01.006

AC and DED Drops

Drug	Age	Brand
Cyclosporine 0.1%	4 Years	Verkazia
Loteprednol	Birth	Lotemax gel
Tacrolimus 0.02% to 0.1%	2-15 Years	Off Label
Olopatadine 0.1%	2 Years	Pataday
Bepotastine besilate 1.5%	2 years	Bepreve

Cyclosporine

Clinical Trial > Nippon Ganka Gakkai Zasshi. 2011 Jun;115(6):508-15.

[A prospective, observational, all-prescribed-patients study of cyclosporine 0.1% ophthalmic solution in the treatment of vernal keratoconjunctivitis]

Randomized Controlled Trial > Eye (Lond). 2024 Apr;38(5):937-944. doi: 10.1038/s41433-023-02807-2. Epub 2023 Oct 30.

Exploration of efficacy and mechanism of 0.05% cyclosporine eye drops (II) monotherapy in allergic conjunctivitis-associated dry eye

Xiling Jiao # 1, Yuanyuan Qi # 1, Ning Gao 1, Chen Zhang 1, Shaozhen Zhao 2, Rubo Yang 3

- Topical CsA can improve VKC and AC.
  - CsA inhibit the activation of mast cells and eosinophils, which is vital in treating the inflammation caused by allergies
- A six-month study of 2,597 patients - significant decrease in symptoms with 0.1% CsA
  - 30% of the patients were able to discontinue steroids within 3 months.

Tacrolimus

Therapeutic effects of 0.1% tacrolimus eye drops for refractory allergic ocular diseases with proliferative lesion or corneal involvement

Contact Lens and Anterior Eye

Treatment of Sjögren's syndrome dry eye using 0.03% tacrolimus eye drop: Prospective double-blind randomized study

- Tacrolimus is a macrolide with immunomodulatory action
- Developed as an immunosuppressant agent for use following organ transplantation
- Tacrolimus ointment is also marketed for the treatment of atopic dermatitis.
- Reported to inhibit calcineurin 100 times more effectively than CsA
- Shown to be effective for the treatment of DED, VKC and AKC

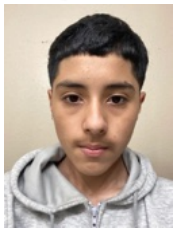
Dx & Tx - 16 YOB

DX: DED secondary to lagophthalmos, partial blinking, AC, too much screen time, sleep deprivation

TX:

- Eyeseal and ointment at night
- Lotemax QID x 2 week, BID x 1 month, QD x 1 month
- Bepreve BID x 90 days
- HA PFAT
- Next step: CsA 0.09% BID (start in 6 weeks)

Lifestyle management: Sleep hygiene, Reduce screen time



Conclusions

- Not all eyedrops are created equally
- Inquire about digital device use and educate patients on its negative impact
- DED and Allergic Conjunctivitis are common comorbidities
  - Look for signs and symptoms of both!
- Assess sleep habits and discuss how sleep deprivation can disrupt eye health and overall well being

ARS Polling Instructions

Step 1 - Open the Vision West app and log in using your badge ID and zip code

Step 2 – Click on blue Education button to see All Education Sessions

Step 3 - Select the course you are attending from the list of sessions

Step 4 - Scroll to the bottom and select "Pre-course questions" prior to the session **AND** "Post-course questions" after the session

Step 5 – Complete the survey questions and Submit!

thank you!

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