Bridging the Generation Gap: Older and Newer Treatments

1:00 – 1:05	Opening Remarks and Program Introduction Kirk L. Smick, O.D.
1:05 – 1:15	Pharmaceutical Advances in Glaucoma Therapy Murray Fingeret, O.D.
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1:20 – 1:30	Diagnostic Advances in Glaucoma Ben Gaddie, O.D.
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1:45 – 1:50	Response Mark Schaeffer, O.D.
1:50 – 2:00	Making Sense of TFOS and DEWS II Management and Therapy Report Mark Schaeffer, O.D.
2:00 – 2:05	Response Jack Schaeffer, O.D.

2:05 – 2:15 Myopia Control: Has Anything Really Changed?
Christopher Wolfe, O.D.

2:15 – 2:20 Response
James Deom, O.D.

2:20 – 2:30 Eyecare in 2030: What Will It Look Like?
Jack Schaeffer, OD

2:30 – 2:35 Response
Kirk Smick, O.D.

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Pharmaceutical Advances in Glaucoma Therapy – Murray Fingeret, OD

1. Evolving philosophy of being proactive versus waiting for progression to occur.
    a. New medications are being approved
    b. Safer surgical devices coming online (allows surgery to be performed earlier in the glaucoma paradigm)
2. Generics
    a. >70% of prostaglandins are now generic
    b. Are generics really equal to branded agents?
    c. Generics aren't necessarily inexpensive
3. Drug Shortages
    a. Dorzolamide – shortage impacts patient care
    b. FDA on website provides list of medication shortages
4. Compounding Pharmacies – Imprimis
    a. Latanoprost
    b. Timolol-Latanoprost
    c. Timolol-Brimonidine-Latanoprost
    d. Tomolol-Latanoprost-Brimonidine-Dorzolamide
    e. Preservative Free

5. Latanoprost Bunod (Vyzulta™) B+L
    a. PG with Nitric Acid
    b. Enhances uveoscleral and trabecular meshwork outflow
    c. Once per day with additional 1.25mm Hg lowering than Latanoprost
    d. Side effect profile comparable to Latanoprost
    e. Approved Nov. 2017
6. Netarsudil – Aerie Pharmaceutical (Rhopressa™)
    a. RhoKinase inhibitor that reduces cellular stiffness in trabecular meshwork
    b. Once per day with approximate 22% IOP reduction
    c. Works equally well even with lower IOPs
    d. Side effects may include corneal verticillata, hyperemia and conjunctival hemorrhages
7. Netarsudil + Latanoprost - Aerie Pharmaceutical (Roclatan™)
    a. Finished phase III trials and hopes to be approved Q1 2019
    b. Works on both uveoscleral and trabecular outflow pathways
    c. Expected significant IOP reduction
    d. Once per day
    e. Side effect profile similar to individual components

Diagnostic Advances in Glaucoma – Ben Gaddie, OD

1. What is needed to diagnose glaucoma in 2018?
    a. Visual field
        i. Are visual fields now obsolete?
        ii. Does OCT supplant visual fields completely?
        iii. Sita Fast vs. Sita Standard
            1. Sita faster
        iv. Central visual field testing
            1. Is it warranted?
            2. How often?
        v. Value of visual fields and detecting progression
            1. GPA
            2. VFI
            3. MD
            4. CPSD
    b. Optical Coherence Tomography (OCT)

i. Time Domain vs. Spectral Domain
ii. How to read an OCT printout
    1. Average RNFL thickness, minimum thickness
    2. Polar regions of RNFL
    3. Diffuse and focal loss
iii. Progression within normal range
iv. GPA progression on RNFL
v. Macular damage in glaucoma
    1. Ganglion cell layer
        a. Differences between instruments in the measurements
        b. Can you diagnose glaucoma with only GCC damage, normal RNFL and VF?
        c. Over diagnosing of glaucoma?
    2. Macular Vulnerability Zone (MVZ)
        a. Don Hood, PhD
        b. Involves axons that primarily emanate from the inferior polar region of ONH/RNFL
        c. These axons terminate in the inferior temporal aspect of the macula
        d. These axons, when damaged, lead to central visual field loss in glaucoma
            i. Treatment and target range IOP considerations for those individuals with MVZ involvement at diagnosis
            ii. Screening with GCC?

c. Electrodiagnostics in glaucoma
    i. Electroretinogram (ERG)
        1. Measures the electrophysiological activity/function of the retinal ganglion cells
        2. Useful in initial diagnosis when otherwise equivocal
        3. Possible utility in looking at improvement in function following starting treatment
    ii. Visual Evoked Potential (VEP)
        1. Limited applicability and sensitivity for glaucoma

The Changing Contact Lens Landscape: Scleral Lenses – James Deom, OD

1. Longevity of Scleral Lenses
    a. Have been around since the notion of contact lenses was first discussed
    b. Resurgence in fitting and design during the last 5-10 years
    c. Technological advances in materials and design has grown the market exponentially
2. Laser guided lathes make for extreme precision
    a. Makes fitting easier so most practitioners can get involved
    b. Was previously a specialty modality
    c. Reverse geometry designs enhance fitting parameters
3. Increased frequency of use by many individuals raises the bar of success
    a. Increased patient comfort
    b. Increased clarity of vision
4. Often a medically necessary procedure
    a. Restores driving privileges for several individuals
    b. Allows several daily tasks to be performed with greater ease
5. Often used as an elective procedure in many cases
    a. Multifocal designs
    b. Monovision designs
    c. Toric designs

Making Sense of TFOS and DEWS II Management and Therapy Report – Mark Schaeffer, OD

1. New definition of dry eye according to TFOS DEWS II

a. Multifactorial disease of the ocular surface
b. A loss of homeostasis of the tear film
c. Ocular symptoms occur
d. Tear film instability occurs
e. Tear film hyperosmolarity
f. Ocular surface inflammation
g. Ocular surface damage
h. Neurosensory abnormalities

2. Improves classification categories
    a. Symptoms without signs
    b. Signs without symptoms

3. Evidence based medicine used to fabricate report
    a. Both old and new treatments reviewed
4. New treatment algorithm
    a. Simple strategy for the practitioner
    b. Easier and less invasive treatments in the beginning
    c. More advanced treatments follow
5. Later steps of treatment
    a. Prescription medications
    b. In office heat procedures
    c. Meibomian gland expression
    d. Infrared pulse light therapy
6. Future treatment options are several
    a. Lifestyle modifications
    b. Non-prescription OTC remedies
    c. Dietary modifications

MYOPIA CONTROL: HAS ANYTHING REALLY CHANGED? -
Christopher Wolfe, OD

1. Evidence based clinical pearls – literature search
    a. Role of outdoor activity a protective factor against myopia progression
        i. Children who spent recess outside the classroom had significantly lower new cases of myopia onset
        ii. Progression of myopia was also significantly lower in children that spent recess outside

iii. The only variable significantly associated to myopia progression was year in school, higher grades having more myopia progression

b. Does undercorrecting myopia help slow down the progression of myopia?
    i. Mechanism theory
    ii. In one study after 2 years in children aged 9-14 years undercorrecting myopia by 0.75D can increase myopia by 25% compared to the fully corrected group
    iii. Effects of axial length are also statistically significant, with about 1 mm more elongation in the undercorrected group
c. How do progressive addition lenses (PALs) and bifocal glasses effect the progression of myopia in children?
    i. Mechanism theory
    ii. One study gave bifocals in children who also had a near esophoria.
    iii. The previously mentioned study reported to slow progression of myopia a 0.25D over 30 months compared to children with SVLs.
    iv. Changes in axial length were less in the PAL group than in the SVL group
    v. The children in the SVLs progressed >0.25D more than those wearing PALs
d. Can commercially available soft multifocal contact lenses retard myopia progression in children?
    i. Multiple studies with multifocal CLs that show an average reduction of 35% in axial length
    ii. Soft multifocal contact lenses with a distance center design slowed the growth of the eye by around 29% when compared to the soft single vision group
    iii. These also slowed myopia progression by around 50%
e. How does orthokeratology compare in slowing myopia growth in children?
    i. Mechanism theory
    ii. The ROMIO study compared Ortho-K to single vision glasses in a 2 year randomized masked clinical trial

and resulted in a 43% reduction in axial length as compared to single vision glasses

f. What is the efficacy and visual side effects of using atropine to control myopia progression?
    i. Mechanism theory
    ii. The first Atropine for the Treatment of Myopia (ATOM1) studied children ages 6-12 and found over 2 years, 1% atropine slowed myopia progression compared to placebo group (-1.20±0.69D)
    iii. ATOM2 study (n=40) compared the effects of 3 different concentrations of atropine on myopia progression, the 0.5% atropine group had the greatest effect on axial length and in slowing myopia
        1. The difference between the 2 groups was insignificant

Eye care in 2030: What will it look like? Jack Schaeffer, OD

1. It is difficult to look beyond the immediate future
    a. Technology is changing quickly
    b. Genetic mapping could change everything in 10 years
2. Changes between 2022 and 2030 will continue
    a. Robotics – will replace some staff
    b. Healthy vs. sick patients
    c. Virtually reality breakthroughs
    d. Artificial Intelligence (AI) medical decision making computers
3. Refraction 2020
    a. Patient will present with their Rx
    b. Home refraction systems will be apps on personal digital device
    c. Multiple pair options will be decided by the family before they arrive
4. Frame selection

a. Glasses will be preselected thru virtual reality devices and the options will be available for try on upon arriving at office
b. Digital printing will have manufactured the frames for try on
c. Frames not selected will be recycled for new ones

5. Lenses
    a. Labs will have the lenses/frames shipped directly to the patient the next day
    b. RTC only for difficult adjustment if needed
    c. Material will have memory shaping ability
    d. Easily adjusted by family
    e. Possible shape changing in imbedded chips for minor Rx changes
6. Examination
    a. 360 retinal screening by robot controlled instrumentation
        i. retinal photography 3D
        ii. OCT macula/optic nerve
        iii. Corneal topo
        iv. Corneal thickness
        v. Corneal endothelial cell counts
    b. OSD screening
        i. Meibomian glands
        ii. TBUT
        iii. Lipid thickness
        iv. Tear layer assay/proteins, etc.
    c. Glaucoma screening (Robotics)
        i. IOP
        ii. Pachymetry
        iii. OCT
        iv. Threshold visual fields
7. The New 2030 Doctor
    a. Viewing room to analyze data
        i. AI robots will analyze data
        ii. Doctor will review final data

b. Patients presenting for comprehensive eye exam will never see the doctor unless a unique problem is detected by robotic systems
c. Doctor will only be available to patients with medical ocular conditions