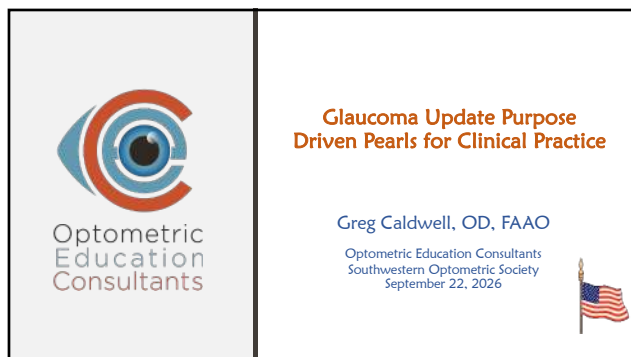
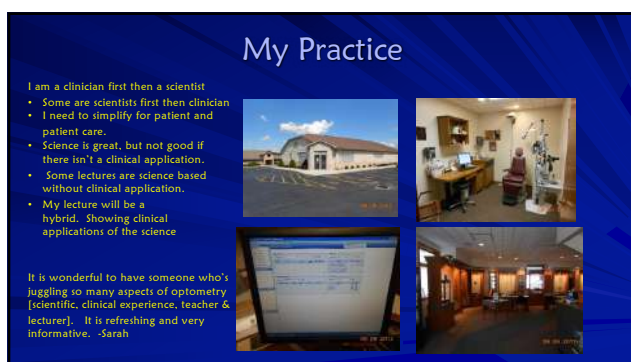




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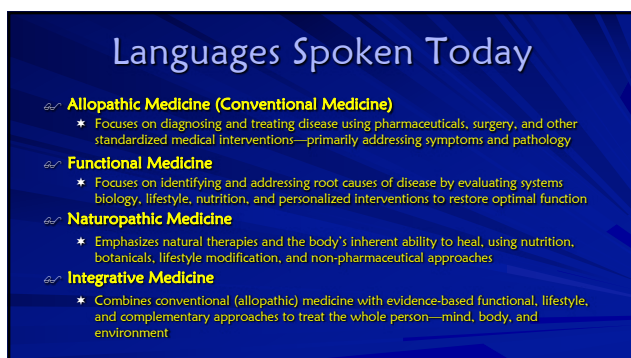
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8

- Proactive approach to managing glaucoma that focuses on earlier surgical, laser, or drug-delivery treatments to reduce intraocular pressure and slow disease progression
- This approach aims to minimize reliance on long-term topical medication, potentially reducing the burden of medication compliance for patients

If you have a glaucoma practice you have an ocular surface disease practice



Superficial Punctate Keratitis (SPK)

A stacked bar chart comparing the percentage of patients reporting mild, moderate, or severe side effects across three treatment groups. The y-axis represents the percentage from 0% to 100%. The x-axis lists the treatment groups: Single eye drops (n=24), Dual eye drops (n=14), and Triple eye drops (n=15). The legend indicates: Severe (red), Moderate (yellow), and Mild (green).

Treatment Group	Mild (%)	Moderate (%)	Severe (%)
Single eye drops (n=24)	54	30	16
Dual eye drops (n=14)	59	23	18
Triple eye drops (n=15)	37	35	28

Number of daily eye drops was correlated with the severity of ocular surface disease

BRAND NAME	ACTIVE INGREDIENT	PRESERVATIVE	EYE DROPS CONTAINING ALTERNATIVE PRESERVATIVES
BRAND NAME WITH BENZALKONIUM CHLORIDE (BKC)			
Aspire	Benzalkonium 0.2% / 1%	BKA 0.01%	Alkaphor P Benzalkonium 0.1% / 0.5% Puffa® (alkaloid oxytocin oculo) 0.005%
Myxine S	Benzalkonium 0.25%	BKA 0.01%	Myxine Latanoprost 0.002%
Myxine P	Benzalkonium 0.25%	BKA 0.01%	Tempo-E Temp-E 0.25% / 0.5%
Lungen	Benzalkonium 0.01%	BKA 0.02%	Thaibon T Trauprost 0.04%
Lungen	Benzalkonium 0.02%	BKA 0.025%	
Lunil	Benzalkonium 0.005%	BKA 0.01%	
Myxine	Benzalkonium 0.25%	BKA 0.01%	
Contigam	Benzalkonium 0.2% / 0.5%	BKA 0.001%	
Aspi	Benzalkonium 1%	BKA 0.01%	
Amibron	Benzalkonium / Chlorobutol 0.2%	BKA 0.001%	
Naasal	Dorzolamide 0.2%	BKA 0.0005%	
Naasal	Dorzolamide 0.2% / 0.5%	BKA 0.0005%	
Naasal	Latanoprost 0.005%	BKA 0.02%	
Naasal	Latanoprost 0.01% / 0.02% / 0.05%	BKA 0.02%	
Thyale	Latanoprost 0.005%	BKA 0.02%	
Naasal	Latanoprost 0.01%	BKA 0.02%	
Thymose	Natamycin 0.1%	BKA 0.01%	
Naasal	Fluorepine 1%	BKA 0.01%	
Thymol	Thymol 0.25% / 0.5%	BKA 0.01%	

BAK is the most used preservative in topical ophthalmic formulations

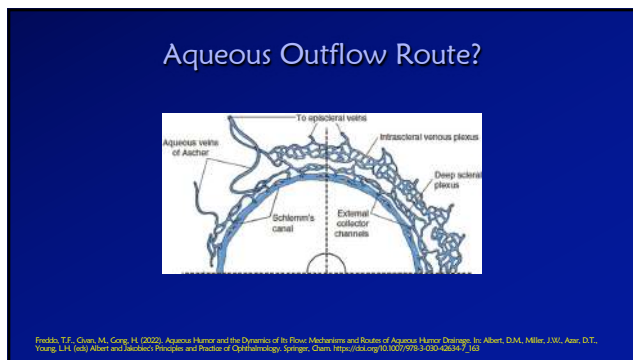
PF-Latanoprost has been approved for the FDA for use in the United States.

PF-Latanoprost has been approved by the FDA for use in the United States.

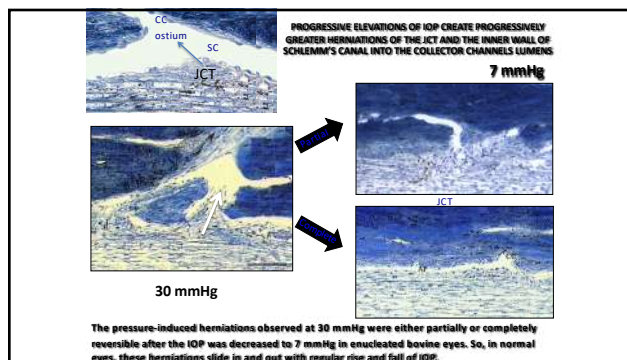
Tear Break-up Time (TBUT)

- * **Conjunctival hyperemia** Following the change to PF-latanoprost, there was a progressive decrease in the prevalence of moderate-to-severe conjunctival hyperemia, to 13.7% of patients at D15, 2.2% at D45 and 1.6% at D90 ($p<0.0001$).
- * **Blepharitis** proportion of patients with no signs of blepharitis increased from 27.3% at D0 to 81.7% after 90 days of PF-latanoprost treatment ($p<0.0001$).
- * **TLUT** improved compared with baseline (D0), in 23.4% of patients at D45 ($p=0.0023$) and in 30.7% of patients at D90 ($p<0.0001$).

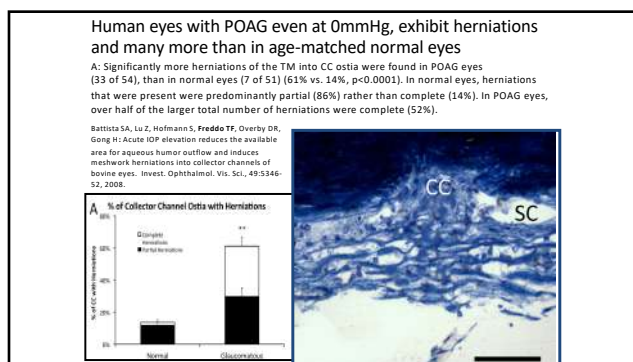
What is glaucoma?



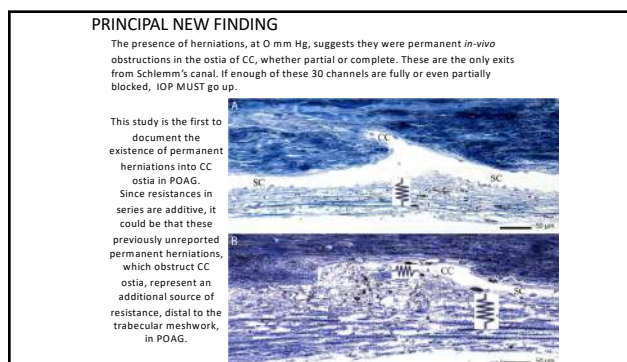
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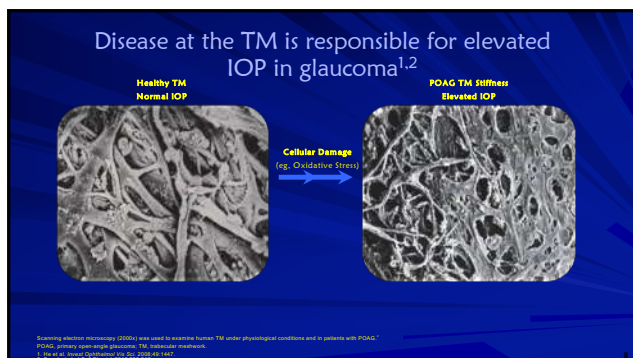
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Kahook Dual Blade – KDB/KDB Glide

Video Courtesy of
Brandon Baartman, MD

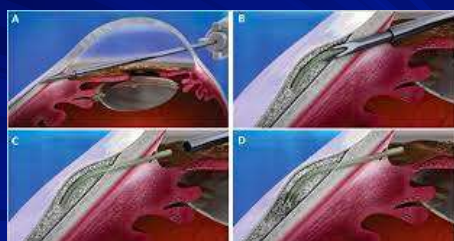
27

Canaloplasty –Transluminal Dilation



28

XEN® GEL STENT



29

XEN® GEL STENT



30

Endoscopic Cyclophotocoagulation (ECP)

- ✓ Ciliary body processes are visualized with an endoscope and are photocoagulated with a laser
- ✓ Result is decreased aqueous production and lower IOP

31

Video of ECP



32

Not All Cameras Are Created Equal

Optos



Eidon - iCare



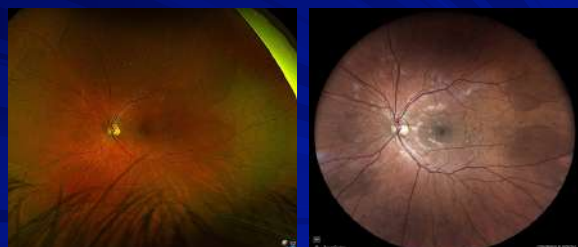
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Grade This Diabetic Retinopathy



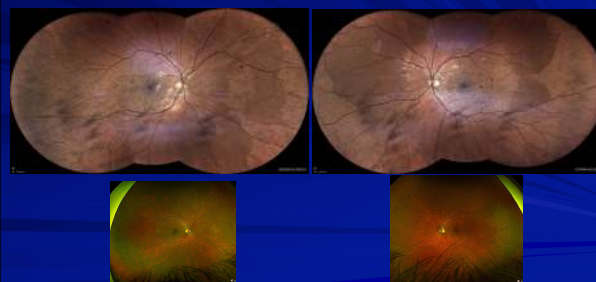
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Grade This Diabetic Retinopathy



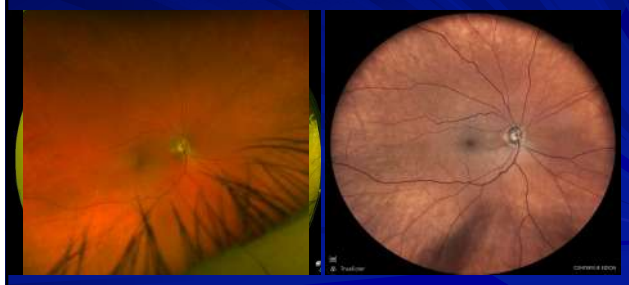
36

Eidon Camera - iCare



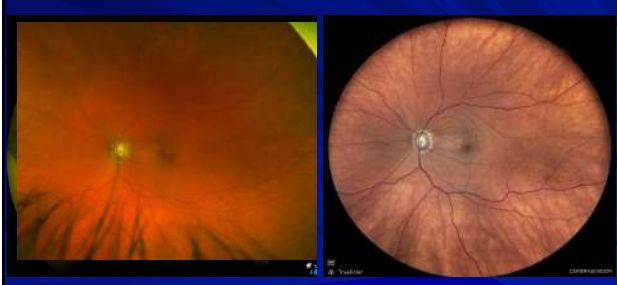
37

Assess the NRR and NFL (Px KS)



38

Assess the NRR and NFL (Px KS)



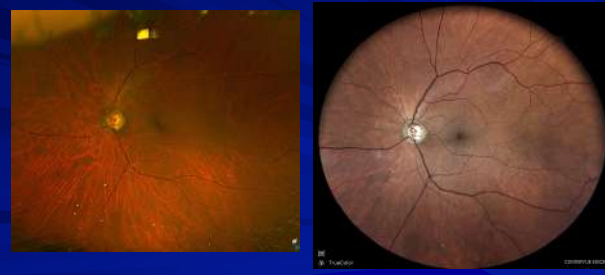
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Assess the NRR and NFL (Px DC)



40

Assess the NRR and NFL (Px DC)



41

ERM



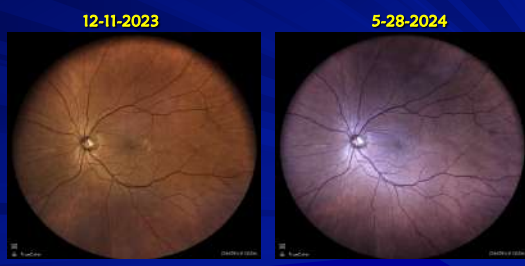
42

Flicker Comparison

Eidon Camera – iCare
Flicker comparison, widefield TrueColor, and autofluorescence

43

Glaucoma - Do you see it?

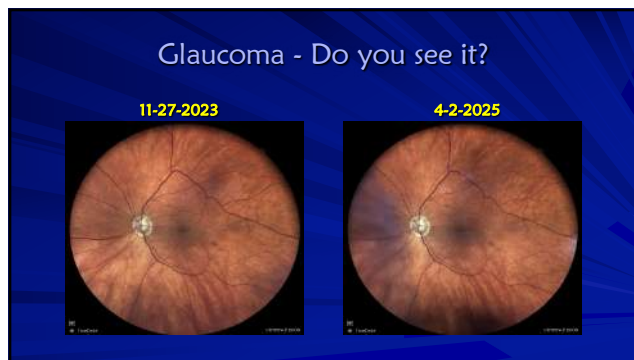


44

Glaucoma - Do you see it?



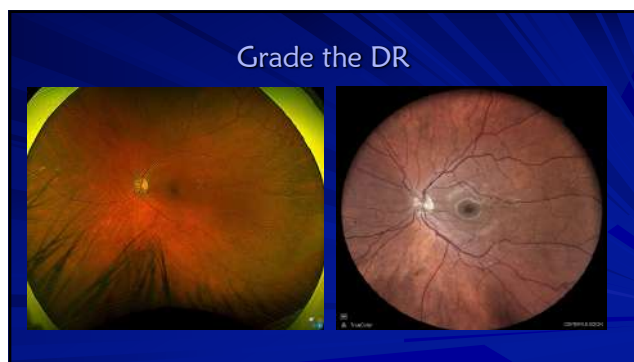
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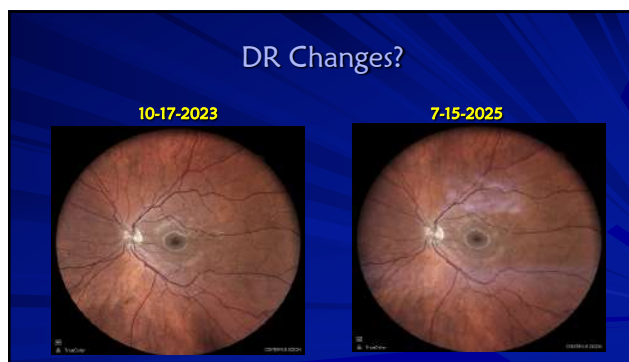
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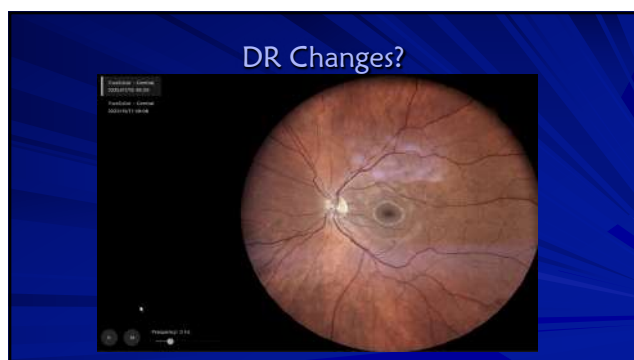
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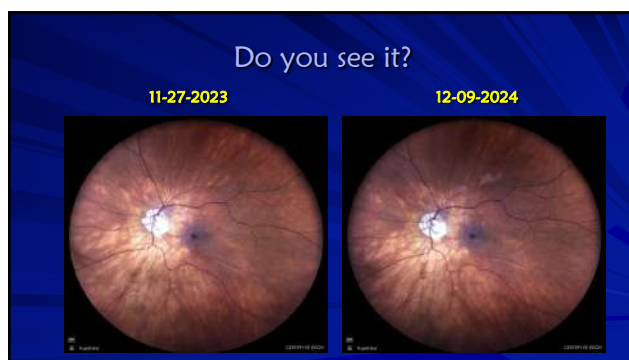
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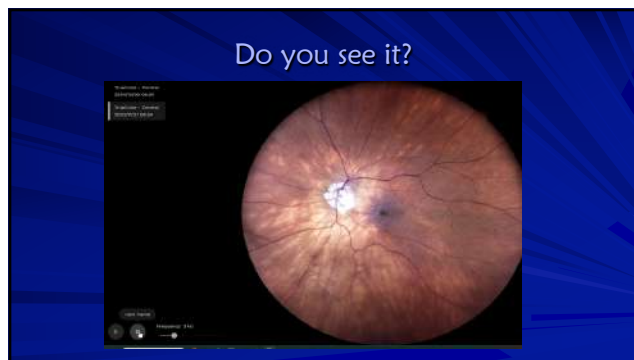
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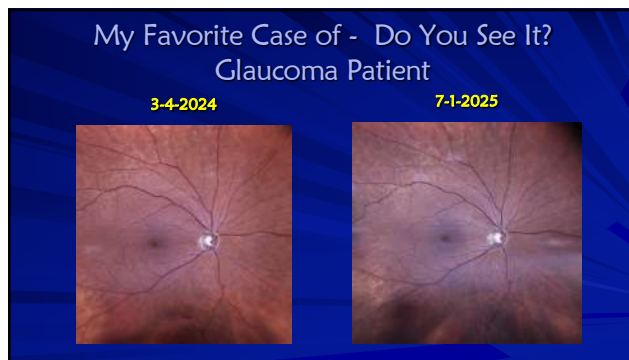
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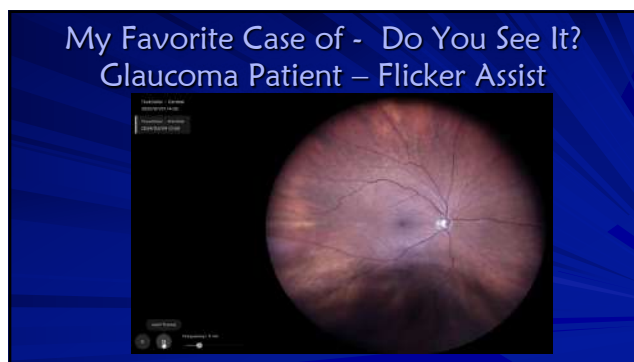
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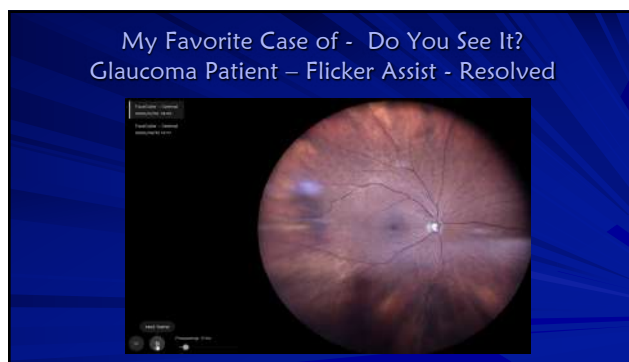
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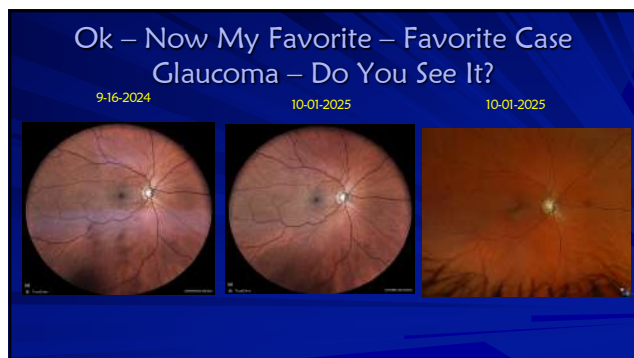
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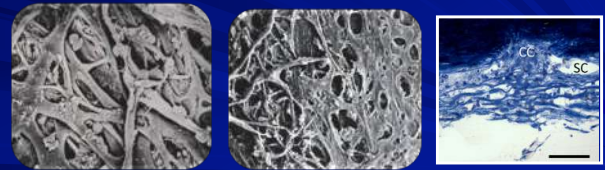
57

Flicker – Rocks!



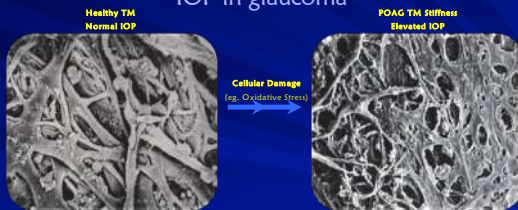
58

Is the Trabecular Meshwork Tissue Biologically Different in a Glaucoma Patient?



59

Disease at the TM is responsible for elevated IOP in glaucoma^{1,2}



Scanning electron microscopy (SEM) was used to examine human TM under physiological conditions and in patients with POAG.¹
POAG: primary open-angle glaucoma; TM: trabecular meshwork.
1. Jia et al. Invest Ophthalmol Vis Sci. 2006;46:1447.
2. Jia et al. Invest Ophthalmol Vis Sci. 2006;46:1447.

60

Chronic and Low-Grade Inflammation

Like cancers and other slow-burn diseases, identifying these conditions early can make the difference between full recovery or a dramatically reduced quality of life or even death (vision loss or blindness)



61

If you have a glaucoma practice you have an ocular surface disease practice



Superficial Punctate Keratitis (SPK)

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Key Tenants of Aging, Performance and Vitality

- Oxidative Stress / Inflammation
- Hormonal Balance
- Stress Hormones
- Glucose / Insulin Regulation
- GUT integrity and microbiome diversity
- Immune Balance
- Environmental Exposure/Burden
- Individuality

Credit to: James LaValle, RPh, CCN

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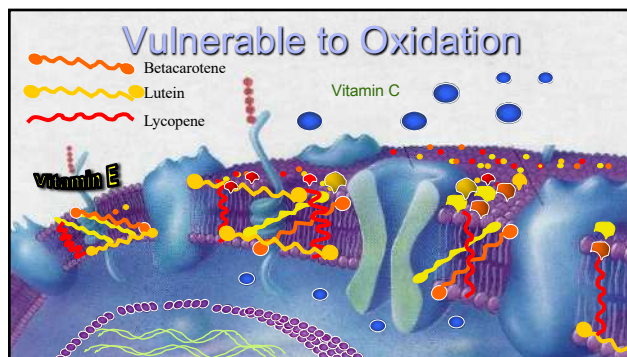


Carotenoids in the Management of Glaucoma: A Systematic Review of the Evidence
Orake W. Loh^{1,2}, Dennis L. Clark³ and Pinakin Corbett Dorey^{1,2}

- We know the advantages of multivitamins and AMD
 - 1) Prevents oxidative damage, 2) Quenches any free radical 3) Prevents photoreceptor death 4) Absorbs stray light
- Oxidative damage can also occur in glaucoma
 - Both Anterior and posterior segment
 - Animal studies and few human trials suggest carotenoids vitamin therapy exerts synergistic neuroprotective benefits.

Pinakin Davey, PhD, OD, FAAO

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Biophotonic Scanner
Measures skin carotenoid levels in the palm of the hand

NIH National Institutes of Health
Turning Discovery into Health

- Quick Test (approx. 30 sec)
- Portable
- Cost Effective
- Remeasure in 60 days
- Reassurance to you and patient

72

New Scanner Coming 2025-is Here 2026

73

Chronic and Low-Grade Inflammation

19,000
26,000
64,000

74

My Recommendation for Glaucoma Patients

Ingredients	Amount	Per Serving
Carotenoids	10,000 mcg	10,000 mcg
Vitamin E	1,000 IU	1,000 IU
Vitamin C	1,000 mg	1,000 mg
Vitamin B12	1,000 mcg	1,000 mcg
Vitamin B6	100 mg	100 mg
Vitamin A	10,000 IU	10,000 IU
Vitamin D3	1,000 IU	1,000 IU
Vitamin K2	100 mcg	100 mcg
Vitamin B9	1,000 mcg	1,000 mcg
Vitamin B3	100 mg	100 mg
Vitamin B1	100 mg	100 mg
Vitamin B2	100 mg	100 mg
Vitamin B4	100 mg	100 mg
Vitamin B5	100 mg	100 mg
Vitamin B7	100 mcg	100 mcg
Vitamin B8	100 mcg	100 mcg
Vitamin B10	100 mcg	100 mcg
Vitamin B11	100 mcg	100 mcg
Vitamin B12	1,000 mcg	1,000 mcg
Vitamin B13	100 mcg	100 mcg
Vitamin B14	100 mcg	100 mcg
Vitamin B15	100 mcg	100 mcg
Vitamin B16	100 mcg	100 mcg
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Vitamin B97	100 mcg	100 mcg
Vitamin B98	100 mcg	100 mcg
Vitamin B99	100 mcg	100 mcg
Vitamin B100	100 mcg	100 mcg

Supplement Facts

Glaucoma Patients

75

Interventional Glaucoma

- ~ Proactive approach to managing glaucoma that focuses on earlier surgical, laser, or drug-delivery treatments to reduce intraocular pressure and slow disease progression
- ~ This approach aims to minimize reliance on long-term topical medication, potentially reducing the burden of medication compliance for patients

76

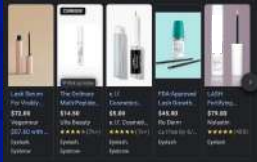
Prostaglandin Analog Side Effects



77

Current Treatments

- ~ Latisse – bimatoprost 0.03%
- ~ Lash Boost – Rodan Fields - contain isopropyl cloprostenate
 - * Synthetic analog of the medication found in Latisse.
 - * Highly potent prostaglandin F2-alpha receptor agonist



78

New and All Natural

- ~ Lash and Brow Serum – Nu Colour – Nu Skin
 - * June 22, 2023 – Available in USA
 - * Formulation of natural extracts and peptides
 - * Prostaglandin free
 - * BAK free
 - * No Rx needed – sold in the office
 - * Clinical studies performed



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Lash and Brow Serum

- ~ No Prostaglandin analogs
 - * 3 peptides and 5 extracts
- ~ No iris or skin color changes
- ~ No BAK
 - * No impact to dry eye
- ~ Not a prescription
- ~ Safe for contact lens wears
- ~ Works within 4 weeks
- ~ 1 bottle (5 ml) lasts 2-3 months
- ~ 3-year self life
- ~ Favorable pricing and profitability
- ~ Able to offer a safer solution to the patient
- ~ Able to capture a part of this \$1.7 billion USD market
- ~ Resources for your office – posters and banners



80

New and All Natural



81

Interventional Glaucoma

- ~ Proactive approach to managing glaucoma that focuses on earlier surgical, laser, or drug-delivery treatments to reduce intraocular pressure and slow disease progression
- ~ This approach aims to minimize reliance on long-term topical medication, potentially reducing the burden of medication compliance for patients

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Durysta™ (Bimatoprost Implant)



- ~ Allergan
 - ★ Approved May 23, 2020
- ~ Indication: Intracameral administration for the reduction of intraocular pressure in patients with Open Angle Glaucoma or Ocular Hypertension
- ~ Sustained-Release, biodegradable intracameral Implant
- ~ Intracameral implant containing 10 mcg in the drug delivery system
- ~ Contraindications:
 - ★ Active or suspected ocular or periocular infections
 - ★ Corneal endothelial cell dystrophy (e.g. Fuch's Dystrophy)
 - ★ Prior corneal transplantation or endothelial cell transplants (e.g., Descemet's Stripping Automated Endothelial Keratoplasty [DSAEK])
 - ★ Absent or ruptured posterior lens capsule, due to the risk of implant migration into the posterior segment
 - ★ Hypersensitivity to bimatoprost or any other components of the product

83

Durysta™ (Bimatoprost Implant)



- ~ Warnings and Precautions
 - ★ Corneal adverse reactions
 - Bimatoprost implants has been associated with corneal adverse reactions and increased risk of corneal endothelial cell loss
 - ★ Iridocorneal angle:
 - Bimatoprost implant should be used with caution in patients with narrow iridocorneal angles (Shaffer grade < 3)
 - Anatomical obstruction (e.g. scarring) that may prohibit settling in the inferior angle
 - ★ Macular edema
 - Bimatoprost implant should be used with caution in aphakic patients, in pseudophakic patients with a torn posterior lens capsule, or in patients with known risk factors for macular edema
 - ★ Intraocular inflammation
 - ★ Pigmentation
 - ★ Endophthalmitis

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Durysta™ (Bimatoprost Implant)

- ~ Dosage and Administration
 - ★ Bimatoprost implant is an ophthalmic drug delivery system for a single intracameral administration of a biodegradable implant
 - ★ Should not be readministered to an eye that received a prior bimatoprost implant
 - On label
- ~ Efficacy
 - ★ Demonstrated in two Phase 3 studies
 - ★ IOP reduction of approximately 5 - 8 mmHg
 - ★ In patients with a mean baseline IOP of 24.5 mmHg

85

iDose® TR (travoprost intracameral implant) 75 mcg

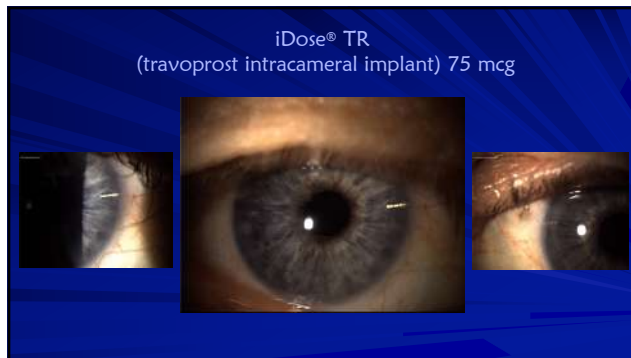
- ~ Glaukos
- ~ Indicated for the reduction of intraocular pressure (IOP) in patients with open-angle glaucoma (OAG) or ocular hypertension (OHT)
- ~ First of its kind, long duration, anchored intracameral procedural pharmaceutical therapy
- ~ Delivers continuous prostaglandin analog therapy directly into the anterior chamber to help with long-term IOP control with proven safety and patient tolerability
- ~ Biocompatible intracameral implant preloaded in a sterile, single-dose inserter
- ~ Anchored into scleral tissue to keep implant fixed and stable
- ~ In 2 pivotal trials, iDoseTR achieved endpoint to timolol at 3 months (inferiority)
- ~ 12 months 81% of iDoseTR patients were completely free of topical medications

87

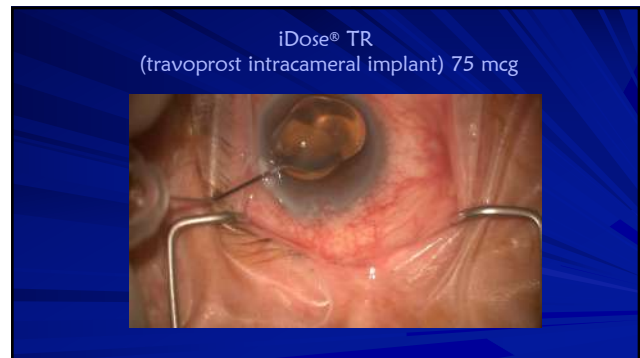
iDose® TR (travoprost intracameral implant) 75 mcg

- ~ Most commonly reported ocular adverse reactions - 2% to 6%
 - ★ Increases in intraocular pressure
 - ★ Irritis
 - ★ Dry eye
 - ★ Visual field defects
 - ★ Eye pain
 - ★ Ocular hyperemia
- ~ No clinically significant endothelial cell loss
- ~ No periorbital fat atrophy
- ~ No serious corneal adverse events
- ~ No DSAEK
- ~ No DMEK

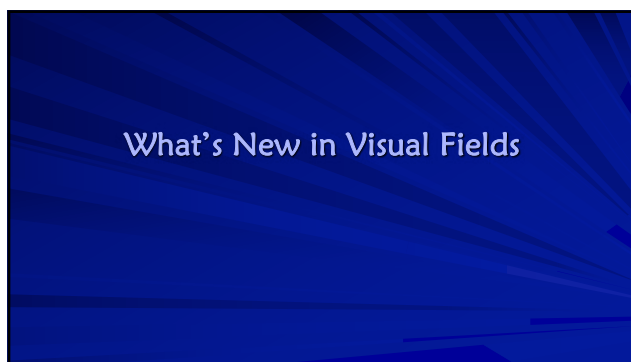
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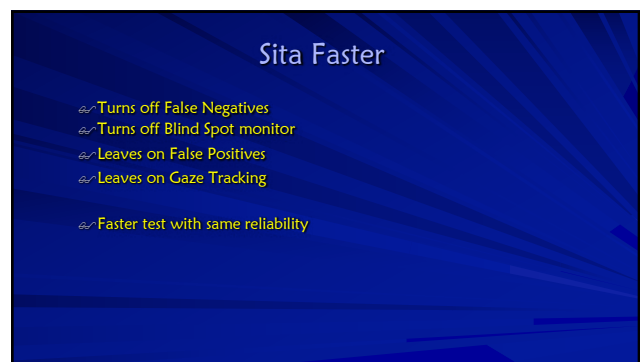
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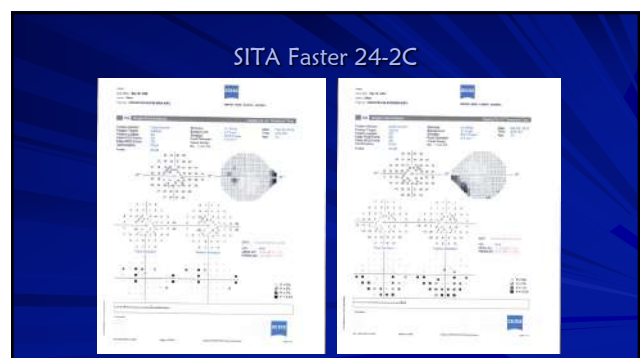
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Opportunities for Improvement in Central 10 Degrees

Glaucomatous damage of the macula
Prog Retin Eye Res. 2013 Jan; 32(1): 1-21.
 Donald C. Hood^{1,2,3}, Ali B. Raza^{4,5}, Carlos Gustavo V. de Moraes^{6,7}, Jeffrey M. Liebmann^{8,9} and Robert Rizzo^{1,10}

- Glaucomatous damage of the macula is common and can occur early in the disease
- Can be missed or underestimated or both, with standard 24-2 VF tests that use a 6° grid

The Prevalence and Nature of Early Glaucomatous Defects in the Central 10° of the Visual Field
Invest Ophthalmol Vis Sci. 2010 Sep; 51(18): 9100-9108.
 John T. Eny, B.S.^{1,2}, Carlos G. de Moraes, M.D.^{3,4}, Ali B. Raza, F.A.C.O.⁵, Jeffrey M. Liebmann, M.D.^{6,7}, Robert Rizzo, M.D.^{8,9} and Donald C. Hood, Ph.D.^{1,10}

24-2 and 10-2 VF Examples

Blue cross region on the 24-2 VF = central 10-2 VF

(A) Both are abnormal.
 (B) 24-2 VF normal; 10-2 VF abnormal
 (C) 24-2 VF abnormal; 10-2 VF normal

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Highest Importance Locations Chosen from 10-2 Pattern

Selecting additional test locations to enhance the 24-2 pattern using a scoring system
Invest Ophthalmol Vis Sci. 2013 Jan; 54(1): 1-10.
 Donald C. Hood^{1,2,3}, Ali B. Raza^{4,5}, Carlos Gustavo V. de Moraes^{6,7}, Jeffrey M. Liebmann^{8,9} and Robert Rizzo^{1,10}

- The expert group selected specific 10-2 test point locations
- Prevalence and depth of glaucomatous macular defects were systematically evaluated to select optimum test points
- Pattern covers areas known to be susceptible to glaucomatous defects both from structural and functional studies

Selected test locations are shown in red boxes

The expert group: Donald C. Hood, Stuart K. Gardiner, Allison M. McKendrick and William H. Swanson.

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Resulting SITA Faster 24-2C Pattern on HFA3

The 24-2C test pattern combines all 24-2 points + ten selected 10-2 points (shown in OD orientation)

Large Gray	24-2 pattern
Large Orange	Ten additional 24-2C points
Small Gray	10-2 pattern

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24-2C SITA Faster

Flagged points detected centrally in OD

24-2 SITA Standard **24-2C SITA Faster**

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24-2C SITA Faster

Flagged points detected centrally in OS

24-2 SITA Standard **24-2C SITA Faster**

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5 Decibels Loss

Mean Deviation

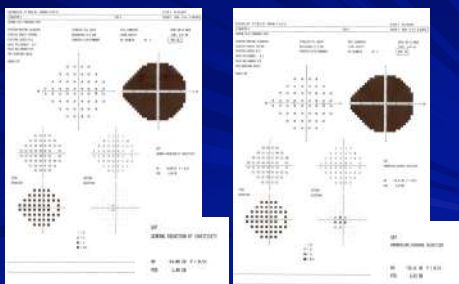
- Read slower
- Don't leave home as much
- Walk slower
- Increase in car accidents

MD	+1.20 DB
PSD	1.00 DB

100

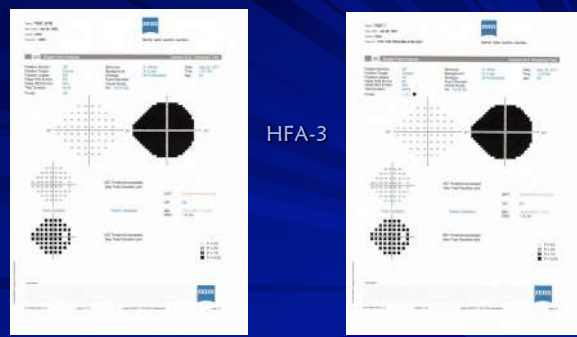
Thoughts on Mean Deviation (MD)

What is the Mean Deviation on a visual field of a blind eye?



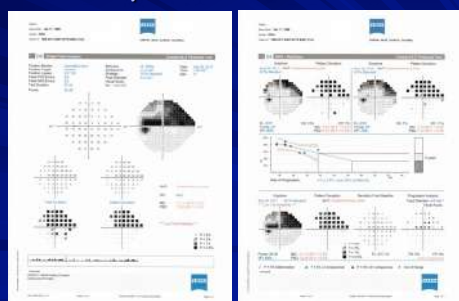
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HFA-3



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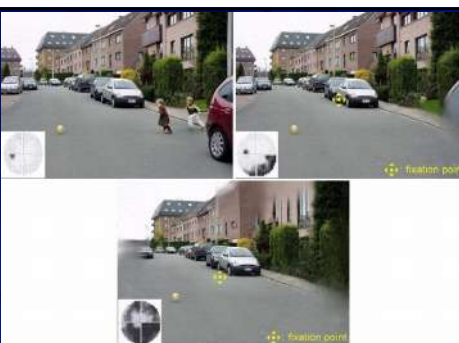
Deep Visual Field Defect



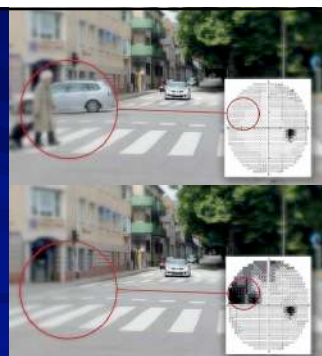
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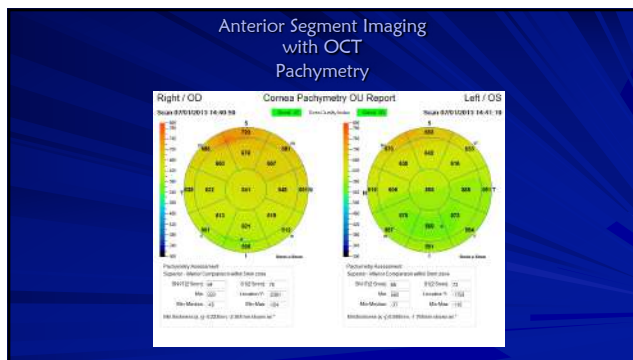
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Reason For Visit: Consultation - AMD OS > OD. Glaucoma Suspect, Low Risk (DOP) OS > OD. Other: Non-luxative Proliferative Retinopathy OD, Diabetes, Type II, No Ocular Complications, Insulin Dependent. Nuclear Sclerosis OD, Neutrophils OS, S/P RSCS Biopsy			
HPI: Asymmetric Symptoms, no eye pain OD, Location: OU OU, Quality: patient had PTK (PDK) 1 year prior			
Review of Systems: Review of System: Negative			
OD OS DSC646 RBC: OD: DSC2036 DSC17, Astigmat: OD: 14.4, OS: 20.3 Degree: Hyperopia 0.3%, Hyperastigmat 0.5%			10:00 AM, 10:30 AM
External	Right Eye	Left Eye	
• General • Pupils • Mobility • CNV • Adheses	Round, Bksh, No RAPD Full Ophthalmic Full Normal Ocular Address	Round, Bksh, No RAPD Full Ophthalmic Full Normal Ocular Address	
Anterior	Right Eye		

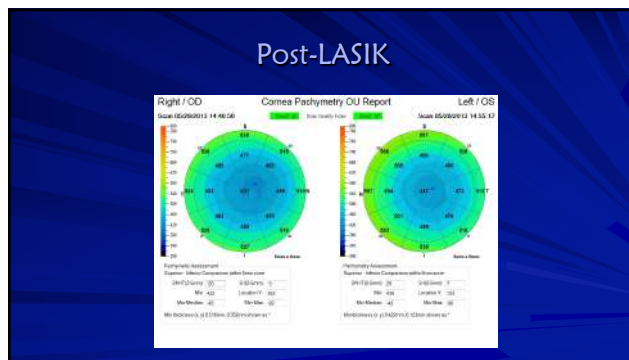
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Anterior Segment Imaging Pachymetry

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Corneal Hysteresis Ocular Response Analyzer G3

Evidence - Key findings from over 800 peer-reviewed publications
 Impact of corneal biomechanics on IOP

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Key Concepts Elasticity, Viscosity, & Damping

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Hysteresis What it is - What it is NOT

Hysteresis characterizes the response to application and removal of force in materials that **absorb & dissipate applied energy**.
 • Not a new concept (first defined in 1890)
 • 13,000+ medical publications on hysteresis in a variety of fields

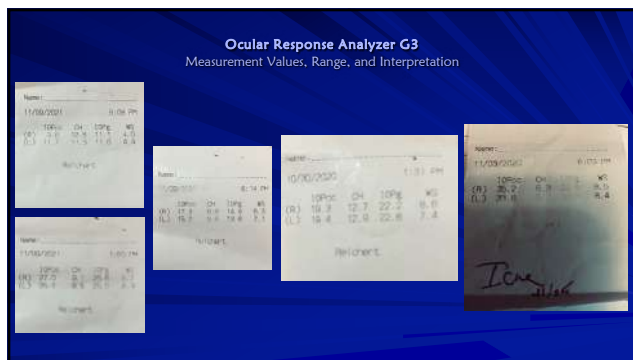
Corneal Hysteresis (CH)
 Reflects cornea's ability to **absorb and dissipate energy**.
 • An indication of "damping" capacity of the ocular tissue
 • **NOT** an indication of "stiffness" or "rigidity"

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Ocular Response Analyzer G3 Measurement Values, Range, and Interpretation

- Average Normal CH is 10.5 mmHg
- Standard dev 1.5 mmHg
- Fairly stable diurnally and with age

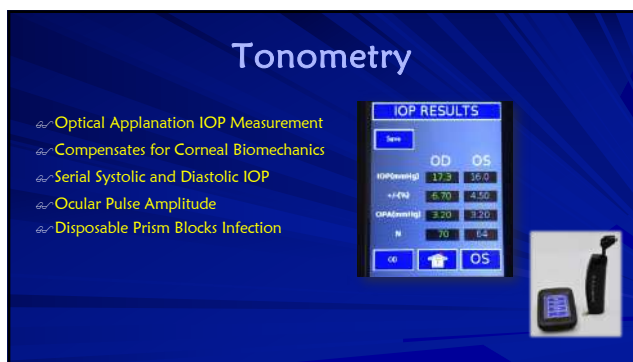
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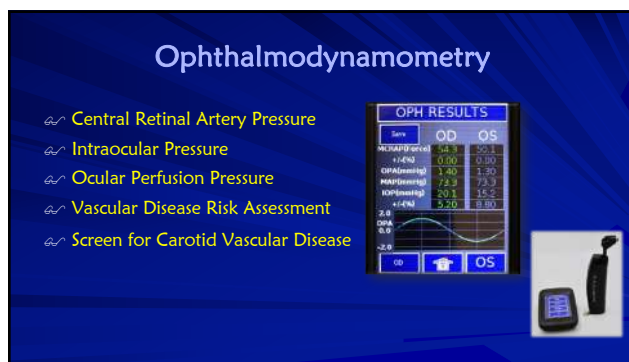
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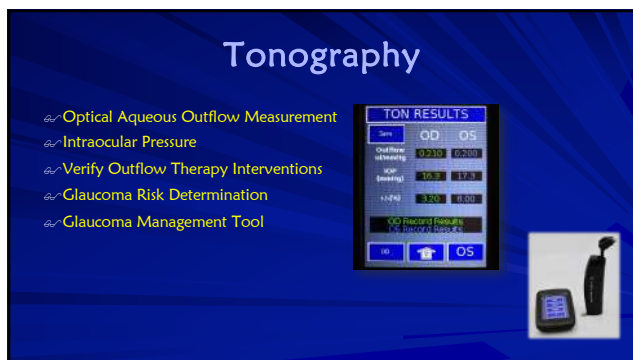
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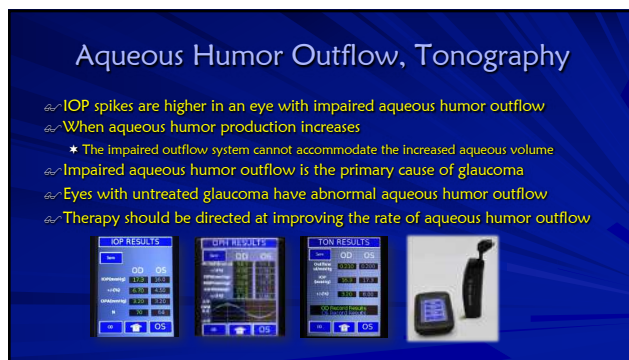
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Question

Which method of IOP measure should only be used for glaucoma diagnosis, treatment, and management?

Many methods are acceptable

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Consultants

Questions and Thank You!

Glaucoma Update Purpose
Driven Pearls for Clinical Practice

Greg Caldwell, OD, FAAO

Optometric Education Consultants
Southwestern Optometric Society
September 22, 2026



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