WOO UNIVERSITY

Tips, Tricks, and Troubleshooting: Interpreting Visual Fields for Glaucoma and More…

Drs. Katie Rachon and Walt Whitley

1

WOO UNIVERSITY

WELCOME!

Host: Dr. Ariel Cerenzie

2

WOO UNIVERSITY

Thank you to Heru for supporting this event with an unrestricted educational grant.

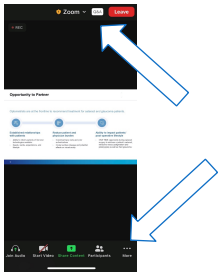
3

WOO UNIVERSITY

- For a 1-hour webinar attendees must be online for a minimum of 50 minutes
- For a COPE certificate, please fill out the survey link in the chat. Also, the survey link will appear when the webinar ends.
- CE certificates will be delivered by email and sent to ARBO with OE tracker numbers
- **CE certificates will be emailed within 4 weeks**
- Ask questions using the zoom on-screen floating panel

4

WOO UNIVERSITY



5

WOO UNIVERSITY

Speaker Bio

Katherine "Katie" Rachon, OD, FAAO has been practicing at Virginia Eye Consultants in Norfolk and Hampton, VA for over 2 years, where she enjoys a busy clinic schedule seeing glaucoma, neuro, anterior segment, and post-operative care patients. Recently, she has taken on a new role as co-director of the residency and externship programs. Dr. Rachon is a frequent speaker for her local continuing education programs and has been published in Review of Optometry. Since her first year of optometry school, she has been active in the American Optometric Association and the American Academy of Optometry and continues to participate in local societies.

6

WOO UNIVERSITY

Financial Disclosures

- Nothing to Disclose

7

WOO UNIVERSITY

Speaker Bio

Walter Whitley, OD, MBA, FAAO practices at Eye Care Associates of Nevada in Sparks, NV where his practice encompasses ocular surface disease, glaucoma, surgical co-management and clinical research. Prior to relocating to Nevada, Dr. Whitley helped Create one of the premier surgical comanagement networks at Virginia Eye Consultants in Norfolk, VA. Dr. Whitley is a nationally recognized author and lecturer and serves as cochief medical editor for Modern Optometry, contributing editor for the Review of Optometry and co-medical editor for Dry Eye Coach. Dr. Whitley is the Immediate Past Chair of the American Academy of Optometry Anterior Segment Section and the immediate past president of the Virginia Optometric Association where he has been recognized as the 2012 Young Optometrist of the Year, the 2015 Legislative Keyperson of the Year and most recently the 2020 Optometrist of the Year.

8

WOO UNIVERSITY

Financial Disclosures

- Aerie: Advisory Board, Speaker
- Alcon: Advisory Board, Consultant, Speaker
- Allergan: Advisory Board, Consultant, Speaker
- Bausch and Lomb: Advisory Board, Speaker
- Bruder: Advisory Board
- CollaborativeEye – Co-Chief Medical Editor
- Dry Eye Coach – Co-Medical Editor
- Eyevance: Advisory Board, Consultant, Speaker
- Kala: Advisory Board, Speaker
- Mediprint Pharma: Consultant
- Oyster Point: Advisory Board, Speaker
- Regener-Eyes: Consultant
- Review of Optometry – Contributing Editor
- Science Based Health: Advisory Board
- Sun Pharmaceuticals: Advisory Board
- Tarsus Pharmaceuticals: Advisory Board
- RVL Pharmaceuticals: Advisory Board, Consultant, Speaker
- Visus Pharmaceuticals: Advisory Board

9

Tips, Tricks, and Troubleshooting: Interpreting Visual Fields for Glaucoma and More…

Katie Rachon, OD, FAAO
Virginia Eye Consultants
Walt Whitley, OD, MBA, FAAO
Eye Care Associates of Nevada

10

The Unmet Clinical Need

Why do we need something new?

Glaucoma is a progressive disease that leads to optic disc cupping and visual field loss due to retinal ganglion cell damage and represents the most common cause of irreversible blindness worldwide.

80 million
Globally living with glaucoma (2020)[1]

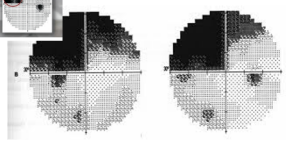
3 million
In the United States living with glaucoma; 2.7m aged >40 with POAG[1]

- **Unfortunately, it is estimated that half of glaucoma patients remain undiagnosed.[1]**

1 Glaucoma: Facts & Figures. (2019). https://www.brightfocus.org/glaucoma/article/glaucoma-facts-figures
2 Prevalence of Open-Angle Glaucoma Among Adults in the United States. Arch Ophthalmol. 2004;122(4):532. doi:10.1001/archopht.122.4.532

11

- Why is perimetry necessary?



- Because we care for our patients!

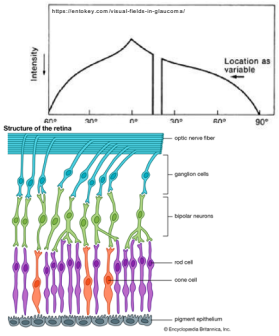
12

Normal Field

- Temp: 90 degrees
- Nasal: 60 degrees
- Superior: 60 degrees
- Inferior: 70 degrees

- Is the 24-2 really a "peripheral" vision test?

- Central 30 degrees contains the majority of the ganglion cells



13

Setting Up For Success

- Attitude adjustment – What? Why? Where? How?

- Lens alignment
  - 1 diopter uncorrected = reduction in 1 decibel of sensitivity
  - <2 diopters of astigmatism can use spherical equivalent
  - Less lenses decreases the chances of lens rim defects
  - Lens should be as close to the eye as possible
  - Humphrey system makes age-adjusted correction for presbyopic patients

- Patient comfort and instruction

14

Indications for VF

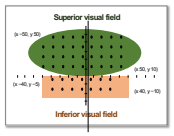
- Glaucoma: 24-2 vs. 30-2
  - Few peripheral defects were seen in new/early glaucoma*
- Neuro
  - Strokes
  - Masses
  - Optic neuropathies
  - Pseudotumor cerebri
- Retina
  - Hydroxychloroquine maculopathy
  - Detachments
  - Macular degeneration
- Freedoms and Limitations
  - DMV testing
  - Disability Requirements

15

Which Test do you Choose?

- Strategies
  - 10-2
  - 24-2
  - 30-2
  - 60-4

Leicester



Esterman

16

10-2

- Indications:
  - Plaquenil testing
  - Retinal conditions
  - Glaucoma
    - Severe AND mild*
- Tests: 10 degrees from central fixation
- 68 locations
- Points are 2 degrees apart

17

24-2 SITA: Swedish Interactive Thresholding Algorithm

- Indications: glaucoma
- Tests: 24 degrees from central fixation
- 54 locations
- Points 6 degrees apart
- Time: 3-7 minutes per eye
- Very similar to 30-2
  - Excludes superior, inferior, and temporal edge points
  - Keeps nasal

18

30-2

- Indications:
  - Neuro cases
  - glaucoma
- Tests: 30 degrees from central fixation
- 76 locations
- Points 6 degrees apart
- Time: 5.5-10 minutes per eye
- Pros:
  - Potentially see defects sooner
- Cons
  - Longer and more chance for artifacts

19

It's all in the details…

STIM size
- 1 through 5 available
- III: standard Goldmann
  - 0.43 degree stimulus
- V: advanced loss
  - 1.72 degree stimulus

- Optic nerve size: 5H x 7H degrees

Background Illumination
- 10 Cd/m2 white background
- Goldmann bowl standard
- Similar to photopic environment

20

It's all in the details…

Threshold vs Suprathreshold
- Threshold: measuring the dimmest at each point
- Suprathreshold: starting brighter to determine loss at any point
  - Pros: easier
  - Cons: not as sensitive to subtle defects

Duration
- 200 milliseconds
- Shorter than a voluntary eye movement

21

SITA-Fast

- Indications:
  - Experienced glaucoma test takers
  - Neuro tests without other pathology
- Duration
  - 10-2:
  - 24-2: 2-5 minutes/eye VS 5-6 or longer in standard
  - 30-2: 3-7 minutes/eye
- Pros:
  - Faster
- Cons:
  - Beginning stimulus is dimmer

22

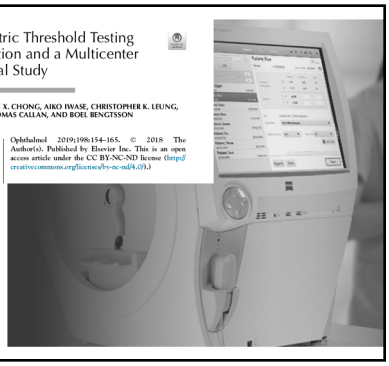
A New SITA Perimetric Threshold Testing Algorithm: Construction and a Multicenter Clinical Study

ANDERS HEIJL, VINCENT MICHAEL PATELLA, LUKE X. CHONG, AIKO IWASE, CHRISTOPHER K. LEUNG, ANJA TUULONEN, GARY C. LEE, THOMAS CALLAN, AND BOEL BENGTSSON

• PURPOSE: To describe a new time-saving threshold visual field-testing strategy—Swedish Interactive Thresholding Algorithm (SITA) Faster, which is intended to replace SITA Fast—and to report on a clinical evaluation of this new strategy.

Ophthalmol 2019;198:154-165. © 2018 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).)

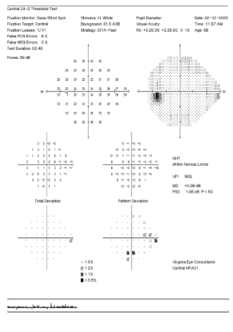
30.4% shorter than SITA Fast
53.5% shorter than SITA Standard



23

Navigating the Printout

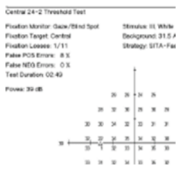
- Patient name
- Reliability
- Strategy
- Patient information
- Raw threshold data
- Grayscale map
- Total Deviation numerical map
- Pattern Deviation map
- Total Deviation Probability map
- Pattern Deviation Probability map
- Gaze Tracker



24

Reliability

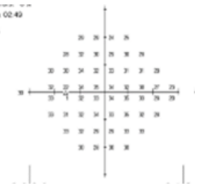
- Fixation Losses
  - Occasionally checks blind spot
  - Detects fixation shifts of at least 3 degrees
  - **>20% = unreliable**
- False POS Errors
  - Pressing button when stimulus not presented
  - **>15% = unreliable**
- False NEG Errors
  - Did not press button in response to stimulus
  - Presented in locations where threshold is normal



25

Threshold

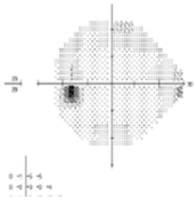
- Bright to dim to determine threshold
- 51 decibel range
- 0= max brightness
- 51=min brightness
- Normal threshold ~ 40 dB



26

Grayscale Map

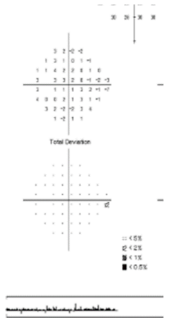
- Excellent tool for patient education and understanding
- Limited valuable info
  - Can show artifacts



27

Total Deviation

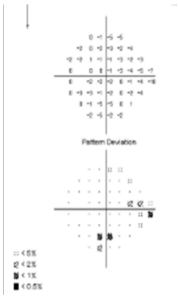
- Compares age
- Numerical Map
- Probability Map
- Central sensitivity is less variable than the periphery
- < 5%, 2%, 1%, and 0.5% of study subjects of the same age



28

Pattern Deviation

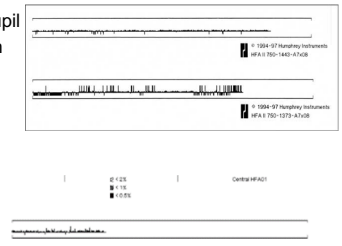
- Remaining defect after general depression or elevation factored out
- Decreases appearance of artifacts



29

Gaze Tracker

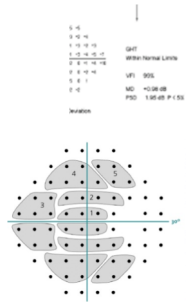
- Tracks the center of the pupil
- Measures gaze when each stimulus is presented
- Accurate to 1 degree
- Uptick = gaze error
  - Higher = worse deviation
- Downtick = blink



30

Navigating the Printout

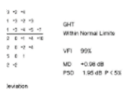
- Glaucoma Hemifield
  - Compares 5 sup vs inf zones
  - Outside Normal= at least one zone is worse than 1%
  - Borderline= at least one zone is worse than 3%
  - General Reduction of Sensitivity= high TD like cataract
  - Specificity is 84% when Borderline findings are outside normal limits



31

Global Indices

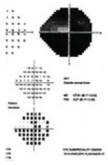
- VFI: Visual Field Index
  - Reflects changes to ganglion cell loss
  - 100%= full
  - 0%= blind fields
- MD: Mean Deviation
  - Weighted average of TD map
  - 0dB= normal
  - -35bD= nearing blindness
- PSD: Pattern Standard Deviation
  - Measures amount of localized defects
  - Hill type pattern
    - 0= normal or total blindness

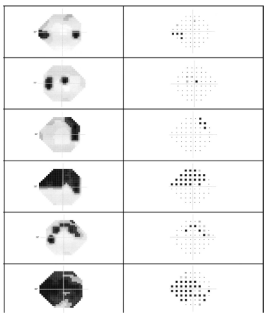


32

Glaucoma

- Defects
  - Nasal step
  - Paracentral
  - Temporal wedge
  - Altitudinal
  - Arcuate
  - Total Constriction
    - W/ or w/out central Island remaining
- Same descriptions for 24-2 and 10-2





33

Glaucoma Staging Based on VF - AAO

Mild or Early Stage Glaucoma

ICD-10 7th digit "1"

- Optic nerve abnormalities consistent with glaucoma
- but NO visual field abnormalities on any visual field test
- OR abnormalities present only on short-wavelength automated perimetry or frequency doubling perimetry

How many fields do we need?

Moderate Stage Glaucoma

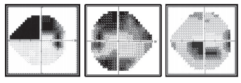
ICD-10 7th digit "2"

- Optic nerve abnormalities consistent with glaucoma
- AND glaucomatous visual field abnormalities in ONE hemifield and
- NOT within 5 degrees of fixation (note: 5 degrees = involvement of spots nearest fixation)

Advanced, Late, Severe Stage

ICD-10 7th digit "3"

- Optic nerve abnormalities consistent with glaucoma
- AND glaucomatous visual field abnormalities in BOTH hemifields
- AND/OR loss within 5 degrees of fixation in at least one hemifield



34

Case 1: 84 yo AA Female

- CC: presents for 3 month IOP check and 24-2 OU for bilateral severe POAG
  - Pt reports no change to vision
- Drops:
  - Dorzolamide BID OU
  - Brimonidine/timolol TID OU
  - Latanoprost QHS OU
- s/p SLT OD 2012
- Target IOP: 12 mm Hg or below OU
- Other Ocular Conditions
  - OIS OU, recently diagnosed
  - Dry Eye

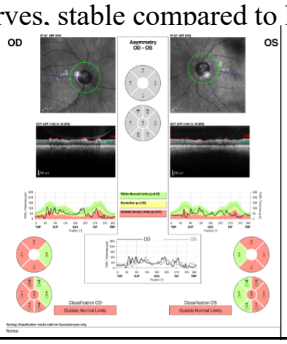
35

Entrance Testing and Ocular Exam

- BCVA
  - OD: 20/40-1
  - OS: 20/25
- Pupils: round, reactive, equal
- EOMS: full
- IOP
  - OD: 14 mmHg
  - OS: 12 mmHg
- Gonio: SS 360, 2+ pigment OU
- Adnexa, lids, conj: clear
- Cornea: trace SPK OU
- Lens: PCIOL OU
- Undilated Nerves
  - OD: 0.9 c/d
  - OS: 0.9 c/d

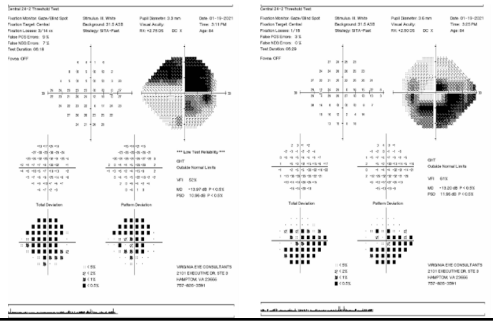
36

Optic Nerves, stable compared to last several



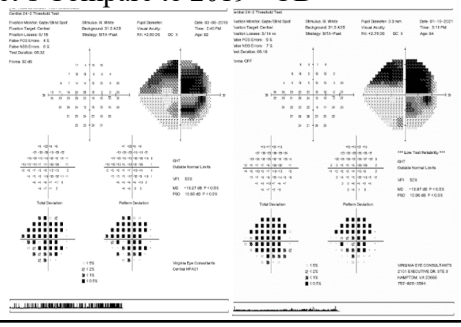
37

Visual Field



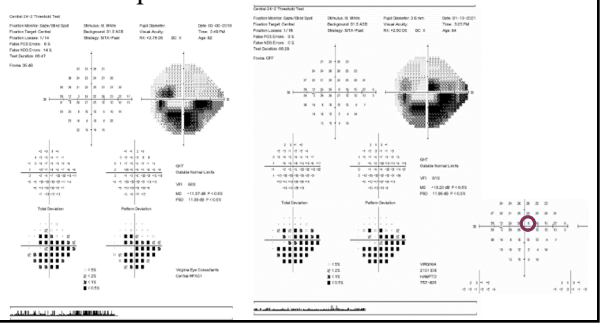
38

Let's Compare to 2019 - OD



39

Let's Compare to 2019 - OS



40

Assessment and Plan

- H40.1133 POAG, bilateral, severe
  - Elevated IOP OD and VF progression OS
  - NEW Target for OS 10 mmHg
  - Switch latanoprost QHS to latanoprost/netarsudil QHS OU
  - Continue:
    - Dorzolamide BID OU
    - Brimonidine/timolol TID OU
- RTC 4-6 weeks for IOP check and 10-2 VF

41

How do we Determine Progression?

- Interpreting decibels
- Using the machine
  - Guided Progression Analysis

42

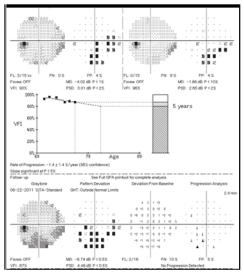
Interpreting Decibels

- Try to compare reliable fields
- New Defects
  - 10 dB change per point
  - At least 2 points with 5dB change in central 10 degrees
  - At least 3 points with 5dB change outside
- Previous Defects
  - 15 dB change per point
  - Any point in the central 10 degrees with a 10 dB change
  - 3 or more points outside the central 10 degrees with a 10dB change on 2 fields or a 5dB on 3 fields

43

Guided Progression Analysis

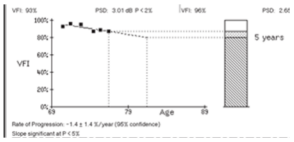
- Two baseline fields
- VFI Trend Graph
- Current Field
- GPA Alert



44

GPA - VFI

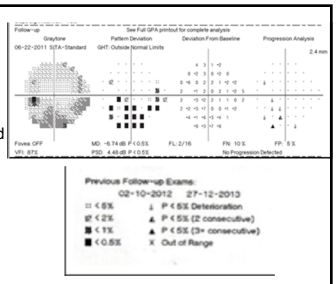
- Gives a prediction based on the trend
  - Must have 5 fields
- Fields with >15% FP are not counted
- Estimate rate of progression
- Slope
  - Not significant= stable
  - Significant at p<0.1%= progression



45

GPA - Alert

- Triangles
  - Darken as defects are repeated
  - Numbers indicate statistical significance
- Alert
  - No Progression detected
  - Possible Progression
  - Likely Progression



46

Case 2: 66 yo AA Male

- CC: 4m IOP check/24-2/DFE for POAG moderate OD, mild OS
  - Pt reports no changes to vision
- Drops:
  - Dorzolamide-timolol QAM OU
  - Latanoprost QHS OU
- s/p SLT OD 04/2020
- Target IOP
  - OD: mid-teens
  - OS: teens
- Tmax
  - OD: 31
  - OS: 33

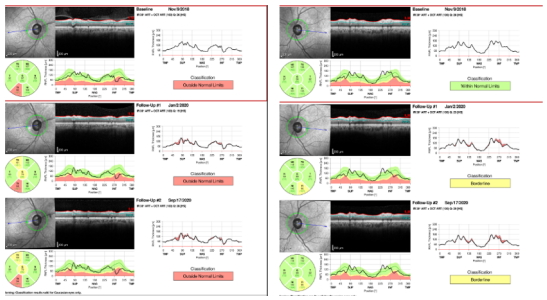
47

Entrance Test and Ocular Exam

- BCVA
  - OD: 20/20
  - OS: 20/25
- Pupils: round, reactive, equal
- EOMS: full
- IOP:
  - 15mmHg OD
  - 14mmHg OS
- Anterior Segment
  - Lens: 2+ NS OD/OS

48

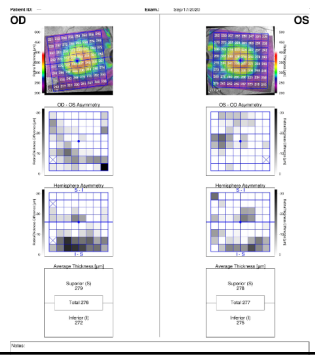
OCT-G



49

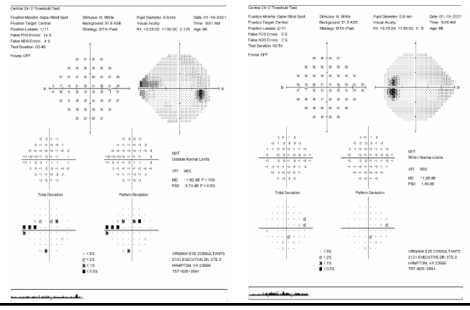
OCT-M

- More asymmetric OD>OS



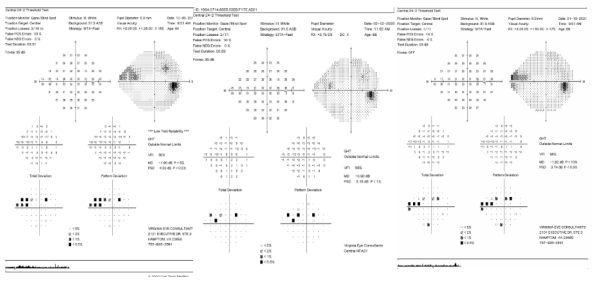
50

24-2 2021



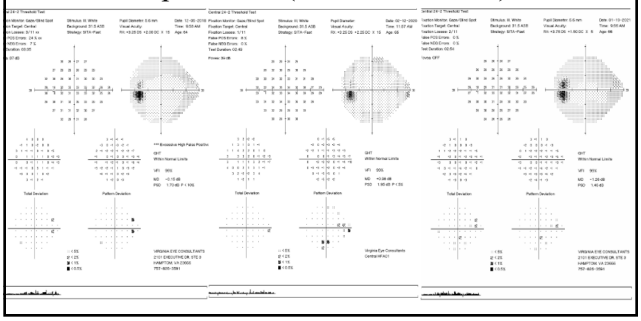
51

Let's Compare – OD (2018, 2020, 2021)



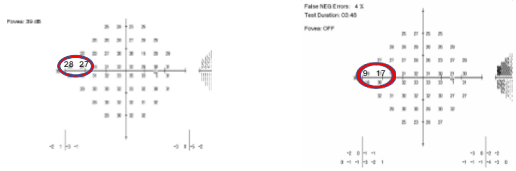
52

Let's Compare – OS (2018, 2020, 2021)



53

OD Zoom In



54

Dilated Exam (2021)


55

Assessment and Plan

- H40.1112 POAG Moderate
  - Discussed SLT vs improving compliance and increasing drops
  - Pt elects the former
  - Increase dorzolamide-timolol to BID, continue latanoprost QHS OU
- RTC in 4-6 wks IOP and compliance check

56

Case 3: 78 yo AA Male

- CC: 3m IOP check/24-2/dry eye check for bilateral moderate glaucoma. Caregiver reports decent compliance with drops, however she "is not always there to monitor him".
- Drops:
  - Timolol QAM OU
    - Wanted dose is BID
  - Bimatoprost QHS OU
  - Cyclosporine 0.05% BID OU
  - Tears TID OU
- s/p SLT OS 2018
- Target IOP
  - OD: mid teens
  - OS: mid to low teens
- Other ocular conditions
  - Severe dry eye

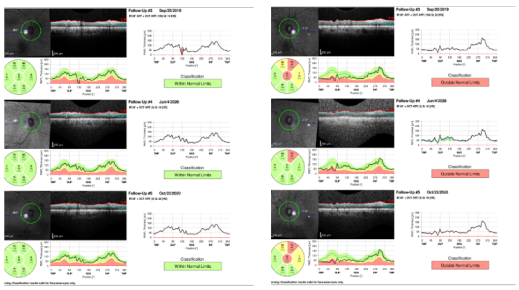
57

Entrance Testing and Ocular Exam

- BCVA
  - OD: 20/20-2
  - OS: 20/20-2
- Pupils: round, reactive, equal
- EOMS: full
- IOP
  - OD: 12mmHg
  - OS: 17mmHg
- Lids: mild MGD
- Cornea: 1+ inferior SPK OD/OS
- Lens: PCIOL OD/OS
- Undilated Nerves
  - OD: 0.5
  - OS:0.65

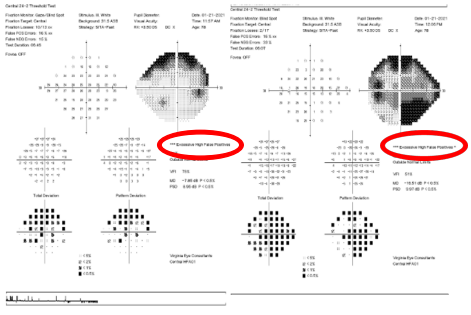
58

OCT-G



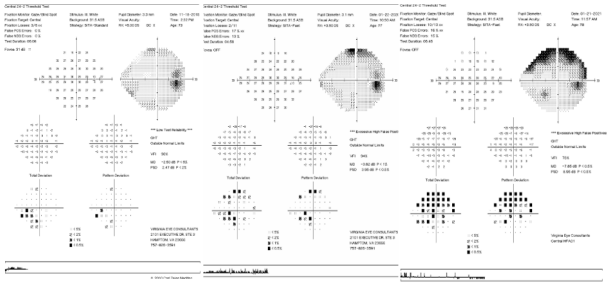
59

24-2



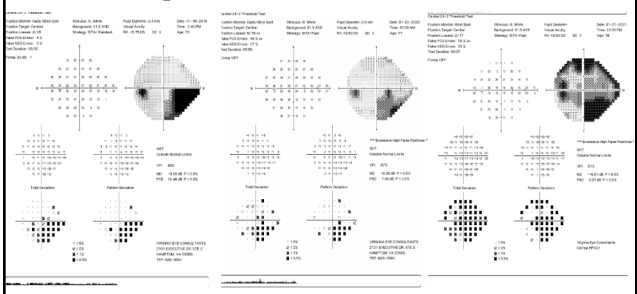
60

Let's Compare 2015 Baseline vs 2020, 2021- OD



61

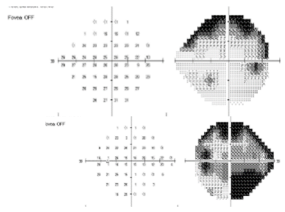
Let's Compare - OS



62

Is this true progression?

Is the lens rim/lid interfering?



Is it reliable with his mental status?

- Caregiver states patient is struggling with dementia and early Parkinson's
- Options for this set of patients?
  - Optimizing therapy
  - Future tech?

63

Assessment and Plan

- H40.1122 POAG, bilateral, moderate
  - IOP elevated above target OS
  - Discussed drop schedule with caregiver, will consistently put drops in during the evening
  - Switch latanoprost QHS to latanoprostene bunod QHS
  - Continue timolol BID OU
- RTC for IOP check
- Consider cautious SLT in the future, may not qualify due to worsening dementia and tremors
- How aggressive should we be for patients with unreliable fields?
  - ADL?

64

Case 4: 53 yo White Female

- CC: 4m IOP check/HVF for mild POAG OU
- Drops:
  - Artificial Tears
- s/p SLT OD and OS 2012
- Target IOP: low teens OU
- Other ocular conditions
  - Dry eye

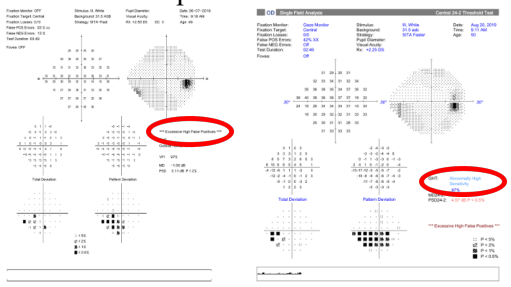
65

Entrance Testing and Ocular Exam

- BCVA
  - OD: 20/30
  - OS: 20/30
- Pupils: round, reactive, equal
- EOMs: Full
- IOP:
  - OD: 16
  - OS: 16
- Gonio
  - OD: SS 360
  - OS: SS inf, nas, temp; CB sup
- Anterior Segment completely WNL

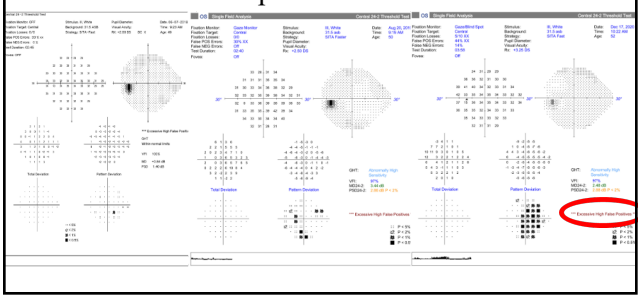
66

Visual Field Comparison '18-'20 - OD



67

Visual Field Comparison '18-'20 - OS



68

Assessment and Plan

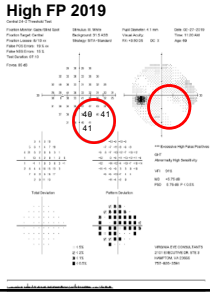
- H40.1131: POAG, bilateral, mild
  - Long-standing history of unreliable fields, will monitor with OCT-G going forward
  - Schedule SLT OU
  - Until SLT, begin latanoprost with potassium sorbate QHS OU

- Can we bill for 2 oct-g per year?

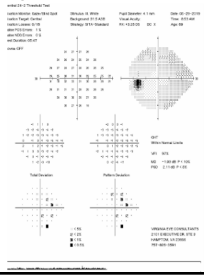
69

Comparing PD>TD

High FP 2019



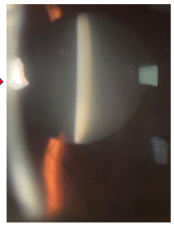
Improved Field 6 Months Later

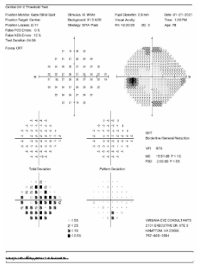


70

Comparing TD>PD

- Main cause:
  - Ant seg pathology
    - cataracts
- Or s/p !
- Miosis
- Uncorrected rx

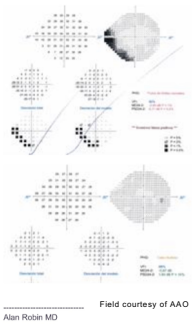




71

COVID Ruins Everything

- Mask defect
- Improved by taping upper edge of mask



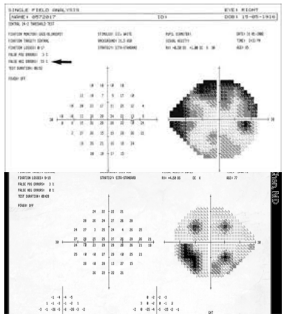
Field courtesy of AAO

Alan Robin MD

72

Clover leaf

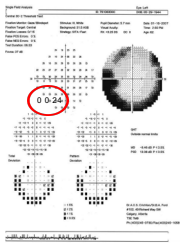
- Inattention
  - Attention decreased
- Reversed
  - Attention increased



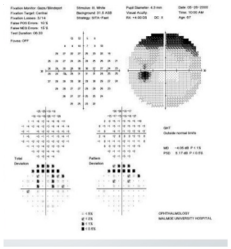
73

Field Interference

Lens Rim



Lid Defect



74

Where are we Going with Visual Field Technology?

75

Advancements in VF Technology

Liquid Lens Technology

Faster 24-2C

76

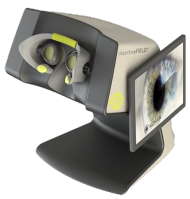
At Home VF Testing

- Quick test time improves patient's experience
- Monitors and records patient's progression
- Accurate HFA style report
- Telehealth reimbursement using existing CPT codes

77

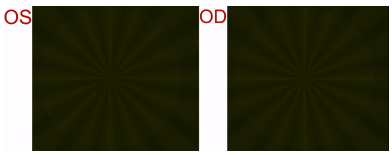
Objective Visual Field Testing

- FDA 510(K) Cleared
- Tests OU simultaneously in 7 minutes
- Measures the response of the pupils to a stimulus



78

Objective Visual Field Testing



- 100% objective
- Improve scheduling
- Simultaneous bilateral exam
- Easy to use & sanitize

Video Courtesy of Kowa Medical

79

Artificial Intelligence
+
Virtual Reality
=
Eye Care's New Frontier??

80

Virtual Reality is Here!!!

- Visual Field
- Visual Acuity
- Color Vision (D-15) 92283
- Pediatrics Visual Field
- Contrast Sensitivity
- Low Contrast Visual Acuity
- Dark Adaptation 92284
- Many more tests in the works….

https://www.oculus.com

81

re:Imagine Threshold Algorithm

Adapts and predicts an optimized full-threshold testing workflow in a shorter testing time without compromising clinical performance, ensuring continuity of care with clinical results correlated to the Humphrey perimeter.

Auto Workflow

Minimizes the time needed to detect disease and can improve your staff's efficiency.

ActiveTrack

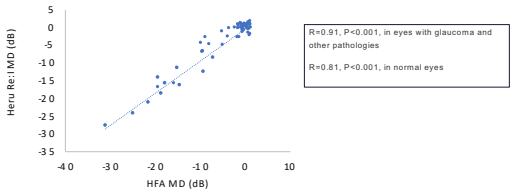
Real-time gaze tracking confirms the patient's fixation is always appropriate, improving data quality while keeping the patient engaged and focused throughout the exam. By eliminating the need for fixation loss monitoring, it enhances clinic workflow and reduces repeat testing.

Correlates strongly with the standard of care, throughout the dynamic range.

82

What is the Same?

Correlates strongly with the standard of care, throughout the dynamic range.



83

The Benefits

VF Test Performed Anywhere in Practice

Light shield blocks the light; testing can be performed in waiting areas and exam lanes.

Faster Testing Time

Threshold testing strategy is statistically significantly faster than the HFA SITA standard.

- 4.3 vs 5 minutes respectively; P<0.001
- 15% gain in pathologic eyes
- 8% gain in healthy eyes

Excellent Repeatability

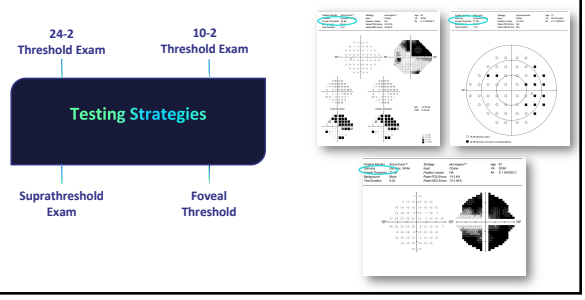
- ICC of 0.95 (95% CI 0.86-0.98) in normal eyes
- ICC of 0.80 (95% CI 0.78-0.82) in pathologic eyes

Virtual Personality

The virtual "personality" instructs and monitors your patients, freeing up your clinician/technician during the examination to tend to your growing practice.

84

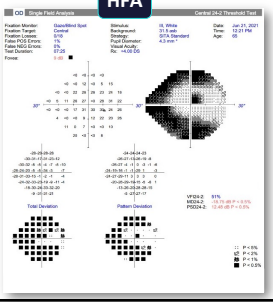
What tests are available?



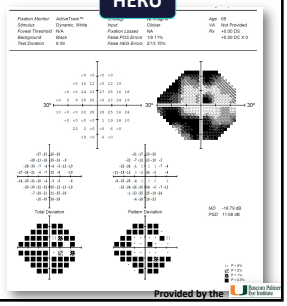
85

65yo male with moderate POAG

HFA



HERU

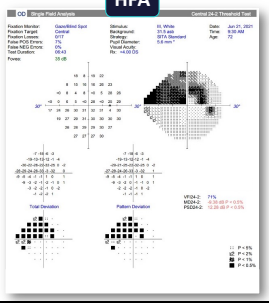


Provided by the

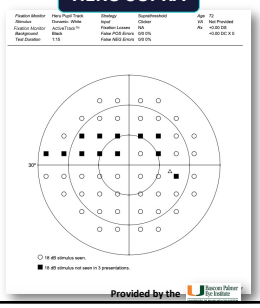
86

72yo female with POAG

HFA



HERU SUPRA



Provided by the

87

VR Platform

- Headset
  - Balanced design
  - Disinfectable
  - Comfortable
  - Portable

- Cloud
  - Microsoft Azure
  - Hippa Compliant
  - A.I. Powered

- WebApp
  - Command Center
  - Start/Stop Test
  - Remote Monitor
  - Patient Record

88

VR VF Software

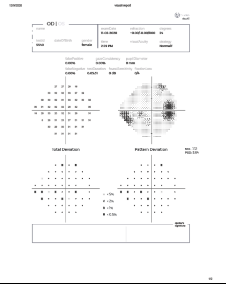
Visual Field

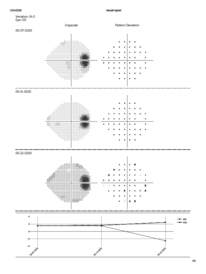
- Normal T - 10-2/24-2/30-2 (4min/eye) **(92083)**
- Supra T (Screener) - 10-2/24-2/30-2 (1.5min/Eye) **(92082)**
- Pediatric Normal T - 10-2/24-2 (4-5min/eye) **(92083)**
- SupraFast (45 sec/eye Screener) **(92082)**
- Esterman Testing

89

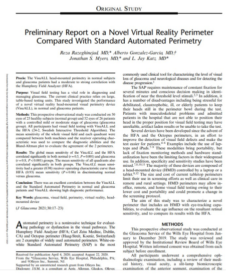
90

Reports are easy to read and easily exported to your EMR





91



92

Visual Field Coding and Billing Considerations

93

AOA Clinical Practice guidelines

Frequency and Composition of Evaluation and Management Visits for Open Angle Glaucoma

Type of Patient, Stage of Disease	Examination Frequency	Tonometry	Gonioscopy	ON/NFL Assessment	Stereoscopic ON, NFL, PPA; Documentation CSLI[1]	Perimetry[2]	Management Plan
New glaucoma patient or new glaucoma suspect	Weekly or biweekly to achieve target pressure	Multiple readings may be needed to establish baseline	Standard classification and documentation at initial visit	Dilate; optic nerve documentation at initial visit	As part of initial glaucoma evaluation	Repeat to establish baseline	Prepare problem list with treatment plan
Glaucoma suspect	6-12 months, depending on level of risk	Multiple readings may be needed to establish baseline	Annually	Dilate every year	Annual	Annual	Review
Stable, mild	3-6 months	Every visit	Annually	Dilate every year at least	Annual	Annual	Review
Stable, moderate	2-4 months	Every visit	Annually	Dilate every year at last	Annual	6-12 months, depending on prior data	Review
Stable, severe	1-3 months	Every visit	Annually	Dilate every year at least	Annual; CSLI[3]	4-8 months, depending on prior data	Review
Unstable, IOP poorly controlled; ON or VF progressing	Weekly or biweekly until stability is established	Every visit	Initial visit and each time other clinical findings warrant reassessment	Dilate at initial visit and each time other clinical findings warrant reassessment	Annual or each time ON or NFL changes	4-6 weeks or as needed to establish new baselines	Formulate new plan until stable
Stability recently established	1-3 months	Every visit; re-establish baseline	Depends on severity of the glaucoma	Dilate every year	Annual or each time ON or NFL changes	Depends on severity of the disease	Review

[1]Confocal scanning laser imaging, confocal scanning laser polarimetry, and optical coherence tomography are all recommended annually in glaucoma suspect patients and those with mild to moderate disease who can respond to standard testing. Tests may be performed up to 2 times per year for patients with unstable borderline control and other glaucoma risk factors in whom visual fields or tonometry cannot be assessed.

[2]Threshold automated perimetry is recommended.

[3]These tests may not be useful for monitoring stable-severe or end-stage disease.

http://www.aoa.org/documents/optometrists/CPG-9.pdf

94

AAO Preferred Practice Patterns

Consensus-based Guidelines for Follow-up Glaucoma Status

Target IOP Achieved	Progression of Damage	Duration of Control (mos)	Approximate Follow-up Interval (mos)*
Yes	No	≤6	6
Yes	No	>6	6–12
Yes	Yes	NA	1–2
No	Yes	NA	1–2
No	No	NA	3–6

IOP = intraocular pressure; NA = not applicable

* Patients with more advanced damage or greater lifetime risk from primary open-angle glaucoma may require more frequent evaluations. These intervals are the maximum recommended time between evaluations.

- VF evaluation should be performed at least yearly
- Rapid visual field progression may be detected earlier by performing three visual fields per year during the first 2 years.

https://www.aao.org/preferred-practice-pattern/primary-open-angle-glaucoma-ppp

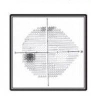
95

Glaucoma Staging Based on VF - AAO

Mild or Early Stage Glaucoma

ICD-10 7th digit "1"

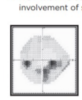
- Optic nerve abnormalities consistent with glaucoma
- but NO visual field abnormalities on ar test
- OR abnormalities present only on shor automated perimetry or frequency do



Moderate Stage Glaucoma

ICD-10 7th digit "2"

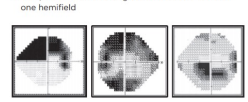
- Optic nerve abnormalities consistent with glaucoma
- AND glaucomatous visual field abnormalities in ONE hemifield and
- NOT within 5 degrees of fixation (not involvement of spots nearest fixation)



Advanced, Late, Severe Stage

ICD-10 7th digit "3"

- Optic nerve abnormalities consistent with glaucoma
- AND glaucomatous visual field abnormalities in BOTH hemifields
- AND/OR loss within 5 degrees of fixation in at least one hemifield



96

ICD-10 and Glaucoma

- If both eyes have same stage, use the bilateral ICD-10 code
- If eyes are at different stages, code each eye individually, list more severe eye first on claim
- Indeterminate - Used when stage cannot be clinically determined
- Unspecified – Used when there isn't any documentation regarding glaucoma stage

Slide Courtesy of Tom Cheezum, OD, CPC, CPOC

97

Important Considerations for Test

1) Medically Necessary?
2) Is the test reasonable – frequency of testing?
3) Is the test appropriate – is it going to provide the best information for the patient's problem (OCT vs. Photos)

Slide Courtesy of Tom Cheezum, OD, CPC, CPOC

98

Testing and I&Rs

Sequence

1. Dr. sees pt and determines need for further diagnostic testing
2. Dr. determines the most appropriate test(s) for problem
3. Dr. enters order in pt record for same day or future date testing. Order documents medical necessity for testing
4. Testing done.
5. Doctor does Interpretation and Report
6. ***Standing orders do nor override this sequence***

I&R

1. Test done, patient reliability
2. Test interpretation, diagnosis
3. Comparative analysis, if appropriate
4. Management, orders for future testing
5. Dr. Signature

Slide Courtesy of Tom Cheezum, OD, CPC, CPOC

99

Testing Frequency Guidelines

- Often included in NCD/LCDs and depend on staging of disease
- Visual Fields
  - 1x/yr – borderline or controlled
  - 2x/yr – for uncontrolled
  - 3x/yr – for rapidly progressing
- OCT (92133)
  - 1x/yr – suspect or mild
  - 1-2x/yr of VF or OCT - moderate

Slide Courtesy of Tom Cheezum, OD, CPC, CPOC

100

Important Testing Considerations

- "If both SCODI and visual field tests are used, only one of each test would be considered medically necessary, as these tests provide duplicative information"
- "Advanced" Glaucoma - "SCODI is not considered medically reasonable and necessary …. visual fields are more likely to detect small changes than SCODI"
- 2021 Medicare LCD document for SCODI

Slide Courtesy of Tom Cheezum, OD, CPC, CPOC

101

Conclusion

- Fields are more difficult to interpret than an objective test
- Describing fields and understanding the field maps aids in management
- Remember the Landmark Studies: AGIS, CIGTS
- Frequency based on medical necessity

102

Thank You!!!

- Katie Rachon, OD, FAAO krachon@cvphealth.com
- Walt Whitley, OD, FAAO
  wowhitley@eyecareassociatesnv.com

103

104