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

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Eye Care Associates of Nevad

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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[2]

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

1. Glaucoma Facts & Figures. (2018). 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

2

The Future of Eye Care

- **Artificial Intelligence**
  - Transactional AI – Amazon
  - Behavioral AI – Cogito
- **Machine Learning**
  - Image/speech recognition
  - Online purchases
- **Deep Learning**
  - Think Siri and Alexa
  - Driverless cars

https://www.mathworks.com/discovery/deep-learning.html

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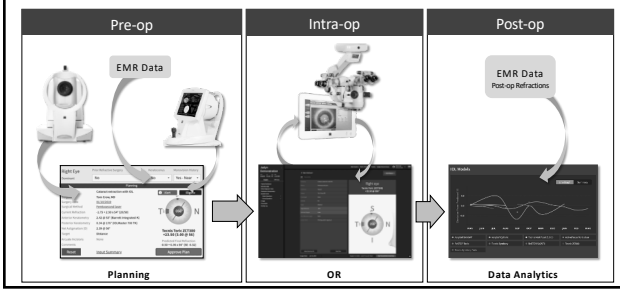
Cataract Suite



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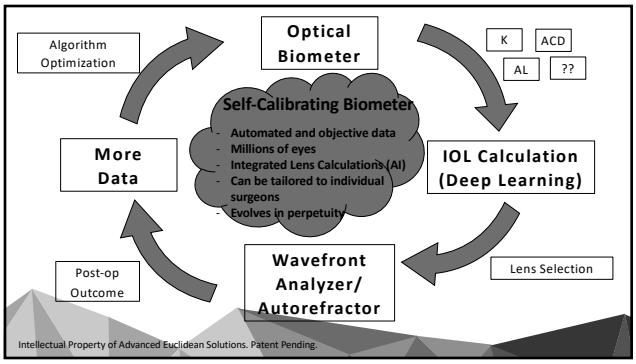

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Evaluation of an AI system for the automated detection of glaucoma from stereoscopic optic disc photographs: the European Optic Disc Assessment Study

- Objectives - To evaluate the performance of a deep learning based Artificial Intelligence (AI) software for detection of glaucoma from stereoscopic optic disc photographs, and to compare this performance to the performance of a large cohort of ophthalmologists and optometrists.
- Results
  - Pegasus was able to detect glaucomatous optic neuropathy with an accuracy of 83.4% (95% CI: 77.5–89.2)
  - This is comparable to an average ophthalmologist / optometrist accuracy of 80.5% / 80% respectively (95% CI: 67.2–93.8) / (95% CI: 67–88) on the same images.
  - There was no statistically significant difference between the performance of the deep learning system and ophthalmologists or optometrists.

Rogers, TW, Jaccard, N., Carbonara, F. et al. Eye 2019. DOI:10.1038/s41433-0190951903

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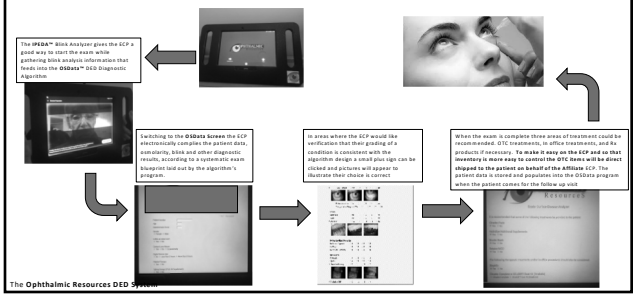
AI and OSD



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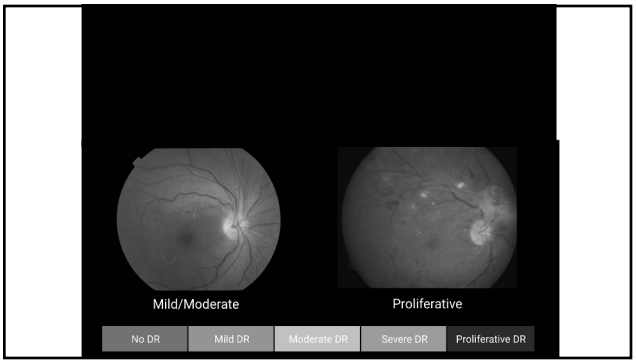

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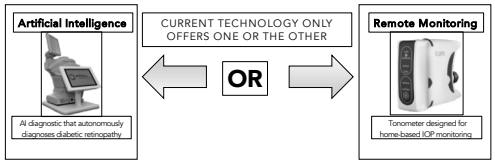
Digital Health in Modern Optometry

Incorporating digital health care models can help propel optometrists into the realm of **artificial intelligence** and leverage the latest innovations in **remote monitoring**.



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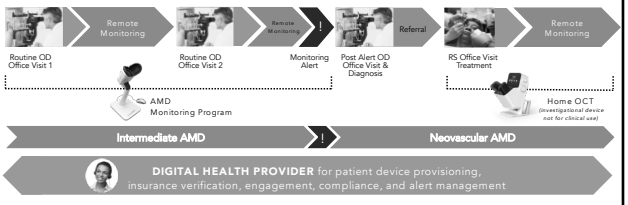
Digital health care services for AMD patients

Dedicated remote monitoring programs with advanced, AI-based technologies support Optometrist diagnosis of acute nAMD conversion and monitoring of chronic therapy by Retina Specialists between office visits



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Home OCT for monitoring chronic therapy of neovascular AMD between office visits

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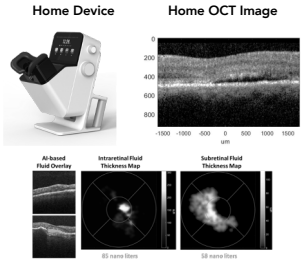

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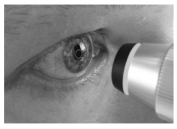
Icare Home

A device is intended as an adjunct for monitoring IOP of adult patients (self-use). The HOME tonometer is designed for use at home or on the go.



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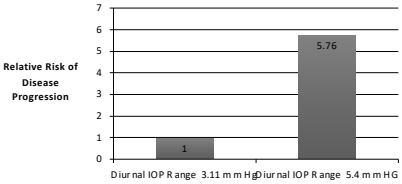
Self-Monitoring Makes a Difference



Arsani S, Zeimer R, Wilensky J, et al. Large diurnal fluctuations in intraocular pressure are an independent risk factor in patients with glaucoma. *J Glaucoma*. 2000;9:134-14

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Where are we Going with Visual Field Technology?

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Advancements in VF Technology

Liquid Lens Technology

Faster 24-2C

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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

Smart System | VR Headset

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Objective Visual Field Testing

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

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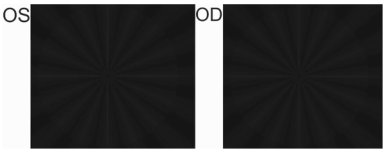
Objective Visual Field Testing



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

Video Courtesy of Konan Medical

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NEI: See What I See
Virtual Reality Eye Disease Experience

- AMD
- Diabetic retinopathy
- Cataracts
- Glaucoma - https://youtu.be/cVFzDrmAY78

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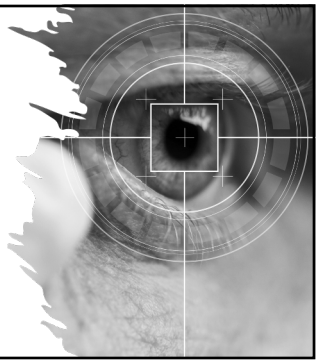
Artificial Intelligence + Virtual Reality = Eye Care's New Frontier??



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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

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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.

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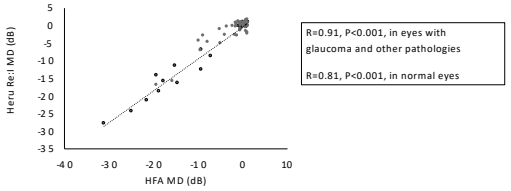
What is the Same?

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



R=0.91, P<0.001, in eyes with glaucoma and other pathologies

R=0.81, P<0.001, in normal eyes

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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.

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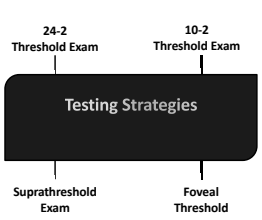
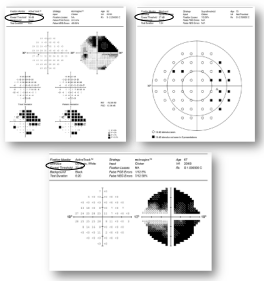
What tests are available?





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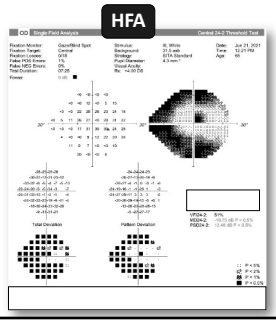
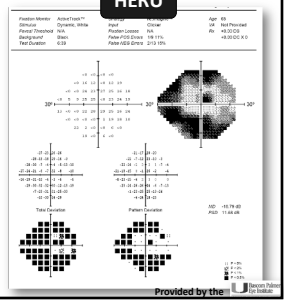
65yo male with moderate POAG

HFA



HERU



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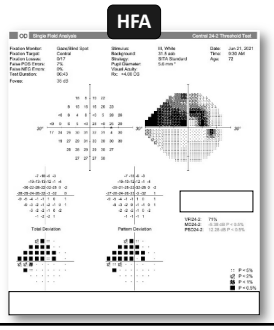
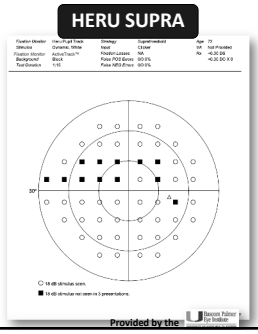
72yo female with POAG

HFA



HERU SUPRA



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Testing Modalities

Document and monitor macular health.

- Rolling "E" contrast sensitivity testing.
- Developed in partnership with Bascom Palmer Eye Institute and MacuHealth.
- Moves test out of the exam lane.
- Test performed in full room lighting.

Technician and/or clinician not required to administer exam.

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Testing Modalities

Coming Soon…

Optimize practice efficiency and the patient experience.

- Ishihara color vision screening **AND**
- Farnsworth D-15 extended color vision test.
- If patient fails the Ishihara test, the re:Vive Auto Workflow feature automatically moves to a D-15 exam to determine the type of color deficiency presented.
- D-15 extended color vision test is a reimbursable service.
- CPT Code 92283.

Technician and/or clinician not required to administer exam.

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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

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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

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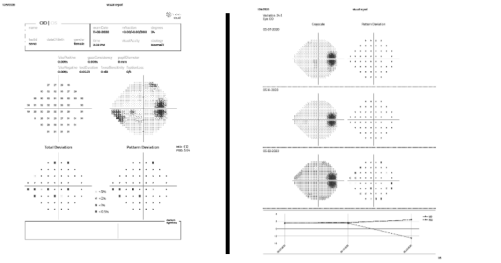
Reports are easy to read and easily exported to your EMR



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ORIGINAL STUDY

Preliminary Report on a Novel Virtual Reality Perimeter Compared With Standard Automated Perimetry

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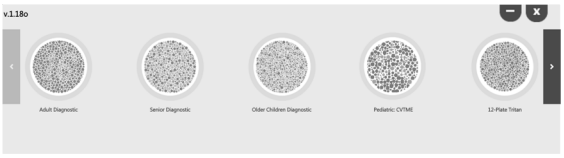
Color Vision



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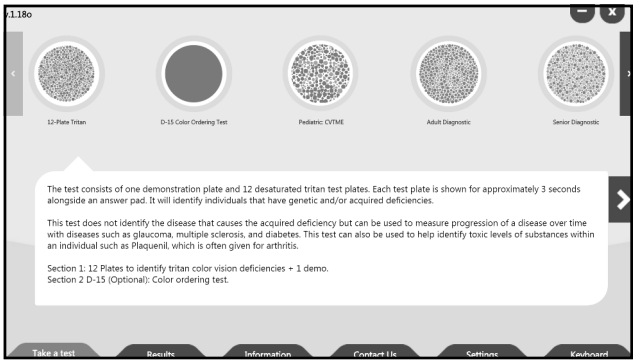

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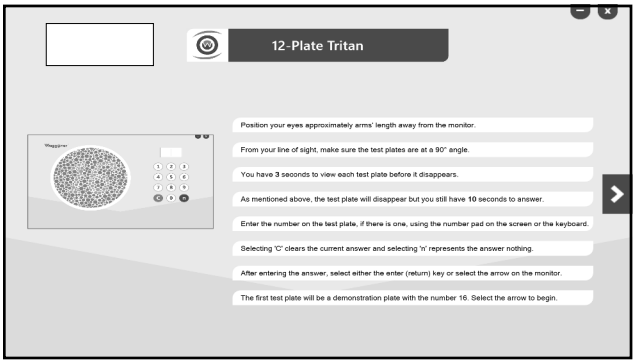

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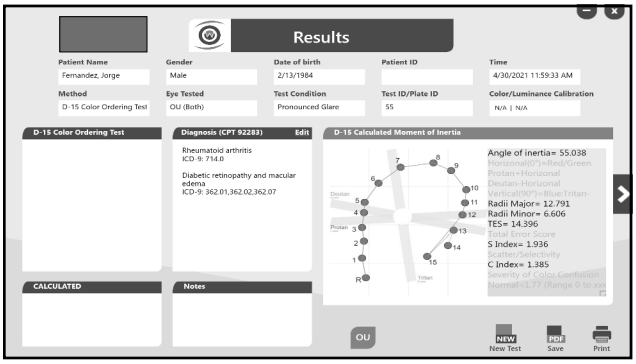

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Back to Visual Fields…..

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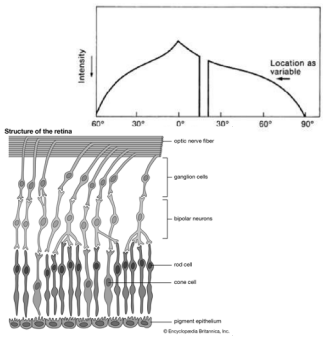
Normal Field

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



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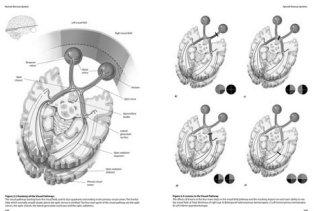
Visual Pathway



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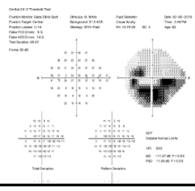
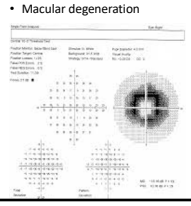
Indications for VF

- Glaucoma: 24-2 vs. 30-2
  - Few peripheral defects were seen in new/early glaucoma*



- Retina
  - Hydroxychloroquine maculopathy
  - Detachments
  - Macular degeneration



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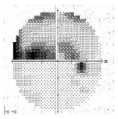
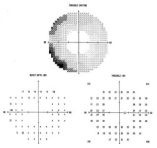
Indications

- Neuro
  - Strokes
  - Masses
  - Optic neuropathies
  - Pseudotumor cerebri



- Freedoms and Limitations
  - DMV testing
  - Disability Requirements



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Setting Up For Success

- Attitude adjustment – What? Why? Where? How?
- Lens alignment
- Patient comfort and instruction

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Lens Correction

- 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
- Consistency

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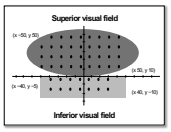
Which Test do you Choose?

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

Leicester



Esterman

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10-2

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

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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

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SITA Standard

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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

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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

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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

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SITA-Fast

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

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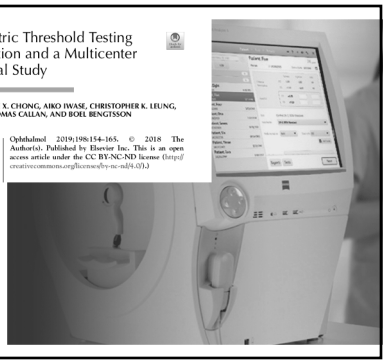
A New SITA Perimetric Threshold Testing Algorithm: Construction and a Multicenter Clinical Study

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 Faster—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 (https://creativecommons.org/licenses/by-nc-nd/4.0/).



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

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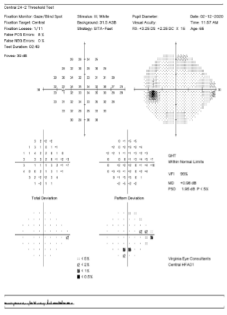
Navigating the Printout

- 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



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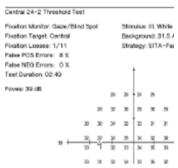
Reliability

- 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



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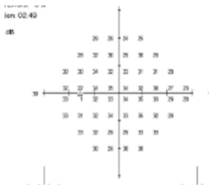
Threshold

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



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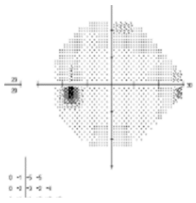
Grayscale Map

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



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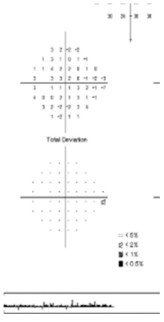
Total Deviation

- 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



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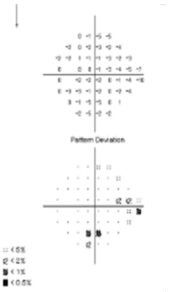
Pattern Deviation

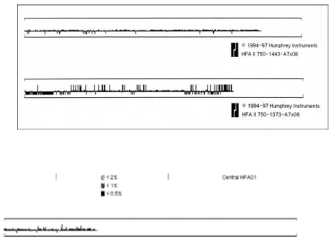
- Remaining defect after general depression or elevation factored out
- Decreases appearance of artifacts



60

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



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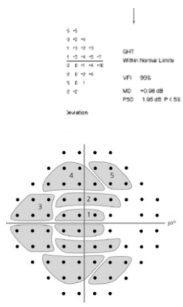
Navigating the Printout

- 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



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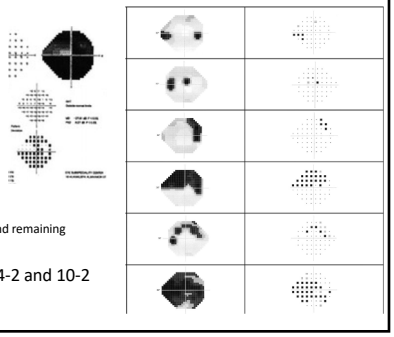
Global Indices

- 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

63

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



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Case Presentation

- CC: vision cloudy OS>OD
- HPI: 68 yo WM presents for cataract evaluation with h/o controlled moderate OAG OS>OD
- Current meds: Levobunolol QD OU, Travataprost qhs OU, Optive
- POHx: SLT OU 2007
- FamHx: mother with glaucoma

65

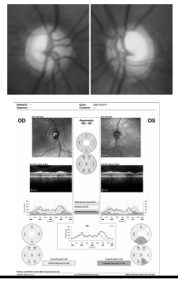
Case Presentation

- BCVA : 20/40 OD, 20/50 OS
- Present Rx: OD -0.50+1.00 x 075 OS -1.00 +0.75 x 110
- Keratometry: OD 43.67/44.00 x 055 OS 43.25/44.37 x 85
- IOP: OD 14, OS 14 (GAT)
- CCT: OD 527, OS 512
- CH: 9.4/9.6
- Tmax: OD 20; OS 24
- Gonioscopy: OU open to scleral spur
- SLE 2+ NS OU

66

Case Presentation

- Dilated Fundus Exam:
- Optic Nerve:
  CDR OD: vert 0.55 horiz 0.5
  (thin rim infer/sup)
  CDR OS: vert 0.7 horiz 0.65
- Macula: OU Flat
- Vessels: WNL
- Periphery: WNL



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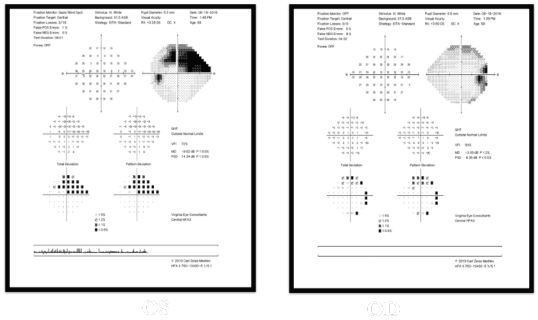

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Case Presentation

- Diagnosis: VS Cataract OU, Controlled Glaucoma
- Type of Glaucoma: open angle glaucoma
  - Stage of Glaucoma: **Severe OS>Moderate OD**
  - What is the Tmax? 20/24
  - What is the target pressure? **Low teens OU**
  - Is current treatment adequate? **Yes**

69

Case 2: 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
  - Dry Eye

70

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

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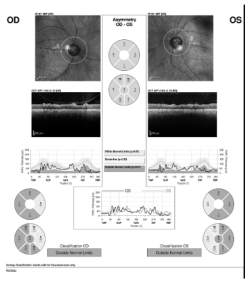
Optic Nerves, stable compared to last several



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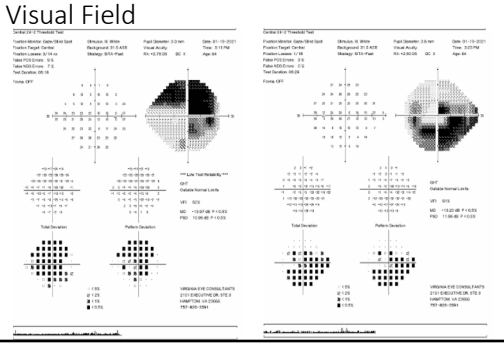
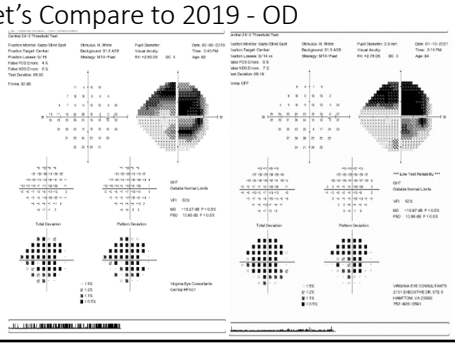
Visual Field



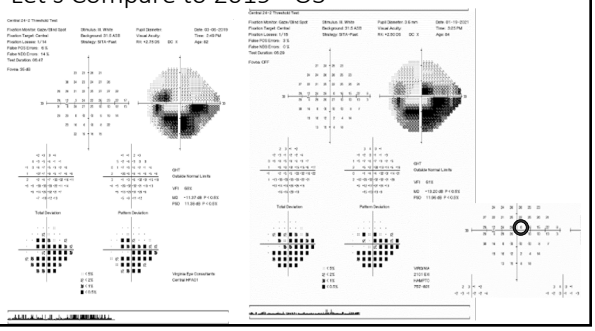
73

Let's Compare to 2019 - OD



74

Let's Compare to 2019 - OS



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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

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How do we Determine Progression?

- Interpreting decibels
- Using the machine
  - Guided Progression Analysis

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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

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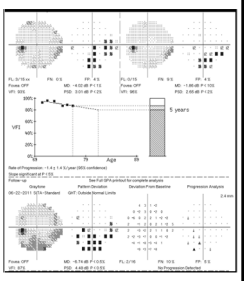
Guided Progression Analysis

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



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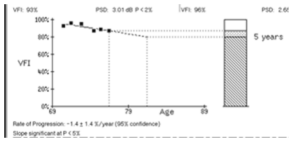
GPA - VFI

- 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



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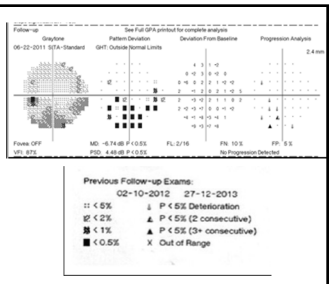
GPA - Alert

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



81

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

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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

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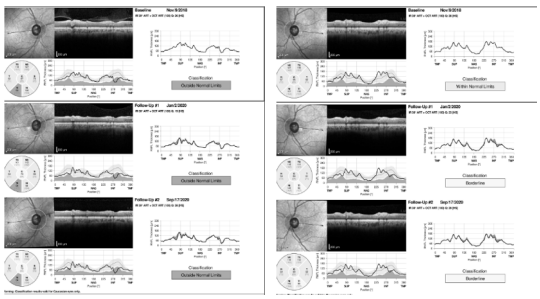
OCT-G



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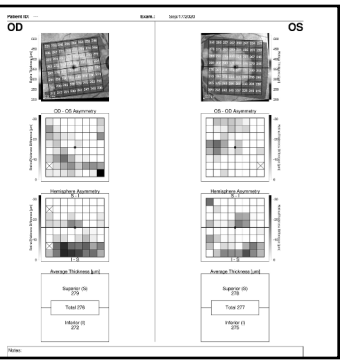
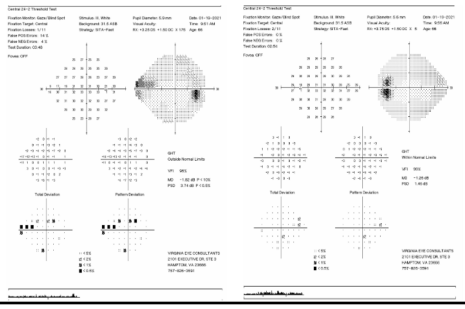
OCT-M

- More asymmetric OD>OS



85

24-2 2021



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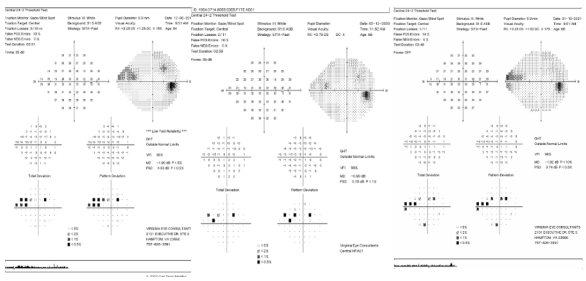
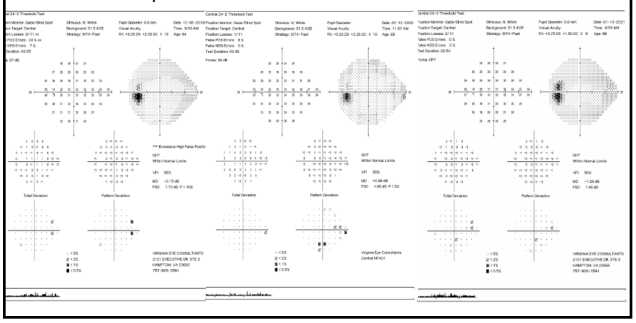
Let's Compare - OD



87

Let's Compare - OS



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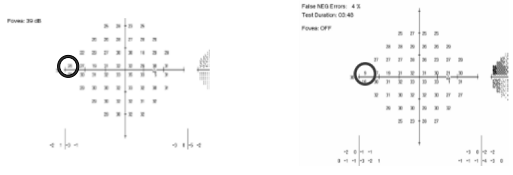
OD Zoom In



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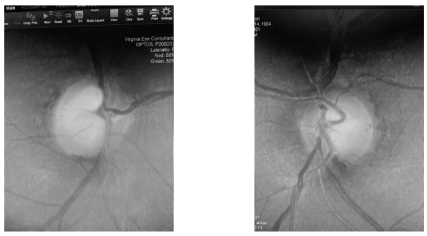
Dilated Exam



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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

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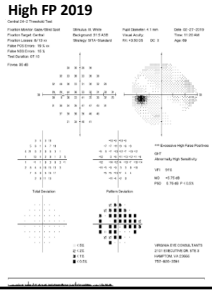
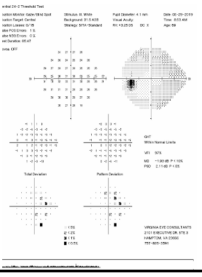
High FP 2019



Improved Field 6 Months Later



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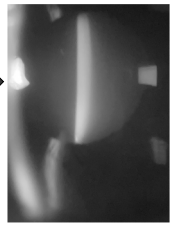
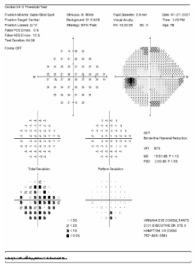
Comparing TD>PD

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





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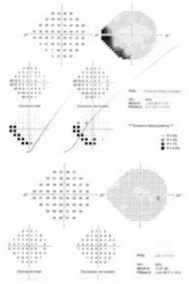
COVID Ruins Everything

- Mask defect
- Improved by taping upper edge of mask



Alan Robin MD

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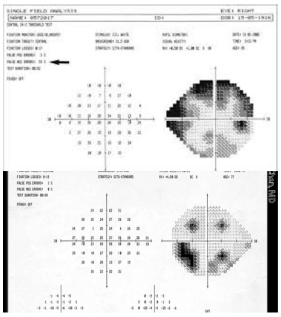
Clover leaf

- Inattention
  - Attention decreased
- Reversed
  - Attention increased



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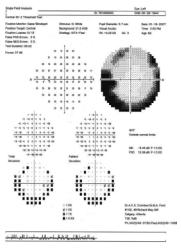
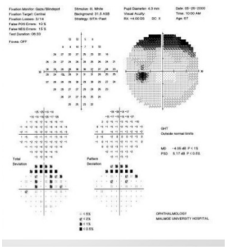
Field Interference

Lens Rim



Lid Defect



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Visual Field Coding and Billing Considerations

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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 CSLF	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; CSLF[1]	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 specially 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

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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

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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 a test
- OR abnormalities present only on sho automated perimetry or frequency do

Moderate Stage Glaucoma

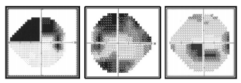
ICD-10 7th digit "2"

- 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



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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

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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

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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

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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

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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

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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

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