The Glaucoma Suspect: Clinical Pearls for Optimal Management

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Disclosures - Michael Chaglasian, O.D.

- Aerie - S
- Alcon - C
- Allergan - A/C/S
- Avellino - R
- Bausch+Lomb - A/S
- Carl Zeiss - A/C
- Equinox – R
- Oculus - C
- Optos - R
- Topcon - C/R

A - Advisory Board
C - Consultant
S - Speaker Bureau
R - Research

Topics/Sections

1. **Who is the Glaucoma Suspect? 5 Case Examples**
2. **How to manage ocular hypertension?**
3. **OCT Imaging: New Methods of Analysis**
4. **Perimetry: New Testing Options, Pros and Cons**
5. **Home Tonometry. Improving options.**
6. **Laser Treatment Options and New Medications.**
   - **How good are they?**


Epidemiology of Glaucoma: The Past, Present, and Predictions for the Future

Abstract

Glaucoma is Coming to Your Practice!

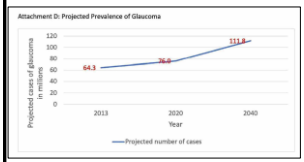

NEWS REVIEW

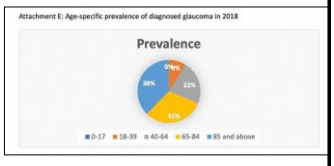
Glaucoma Unduly Burdens Blacks, Asians

Study projects that the disease will primarily affect these ethnic groups by 2040.

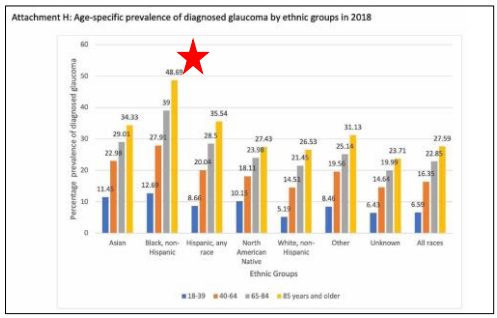
https://www.reviewofoptometry.com/CMSDocuments/2021/02/FebruryReview.pdf

Data





Allison K, Patel K, Alabi O. Epidemiology of glaucoma: the past, present and predictions for the future. Cureus. November 24, 2020



Allison K, Patel K, Alabi O. Epidemiology of glaucoma: the past, present and predictions for the future. Cureus. November 24, 2020

Who is the Glaucoma Suspect?

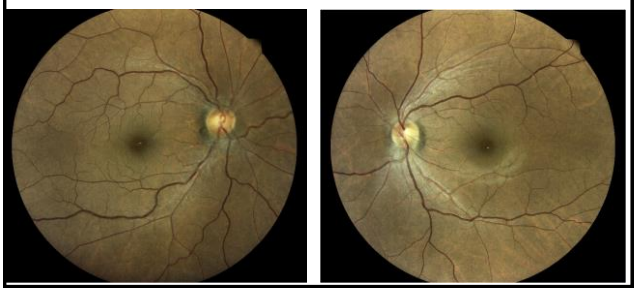
Risk Assessment in Clinical Practice
- identify and document

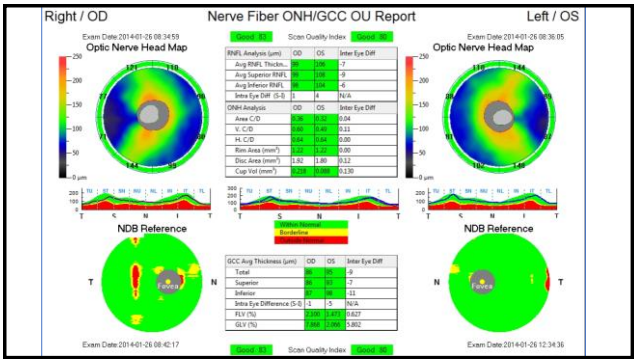
CASE 1

64 yo, white male, low myope
History of **ocular hypertension** w/ IOP in mid/high **20's**.
Excellent health. Question of family History of IOP.
Last seen 5-6 years ago.
Was aware of OHTN but felt everything was normal.

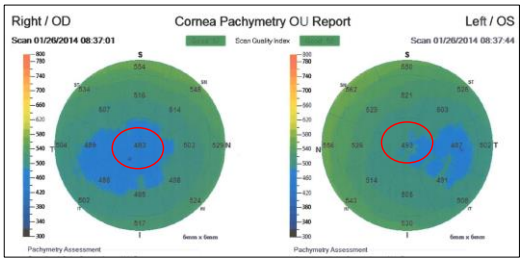
Results from earlier examination:
(other findings were normal/unremarkable)

Baseline Photos (Eidon). Important for all Suspects





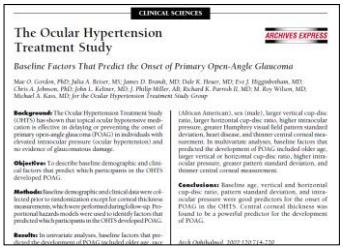
First Red Flag:



Ocular hypertension/Glaucoma Suspect

PATIENT EDUCATION IS KEY,
EXPLAIN RISK OF FUTURE GLAUCOMA
THERE ARE TOOLS TO HELP WITH THIS:

The Ocular Hypertension Treatment Study



CLINICAL SCIENCES

The Ocular Hypertension Treatment Study

ARCHIVES EXPRESS

Baseline Factors That Predict the Onset of Primary Open-Angle Glaucoma

Mae O. Gordon, PhD; Julia A. Beiser, MS; James D. Brandt, MD; Dale K. Heuer, MD; Eve J. Higginbotham, MD; Chris A. Johnson, PhD; John L. Keltner, MD; J. Philip Miller, AB; Richard K. Parrish II, MD; M. Roy Wilson, MD; Michael A. Kass, MD; for the Ocular Hypertension Treatment Study Group

Background: The Ocular Hypertension Treatment Study (OHTS) has shown that topical ocular hypotensive medication is effective in delaying or preventing the onset of primary open-angle glaucoma (POAG) in individuals with elevated intraocular pressure (ocular hypertension) and no evidence of glaucomatous damage.

Objective: To describe baseline demographic and clinical factors that predict which participants in the OHTS developed POAG.

Methods: Baseline demographic and clinical data were collected prior to randomization except for corneal thickness measurements, which were performed during follow-up. Proportional hazards models were used to identify factors that predicted which participants in the OHTS developed POAG.

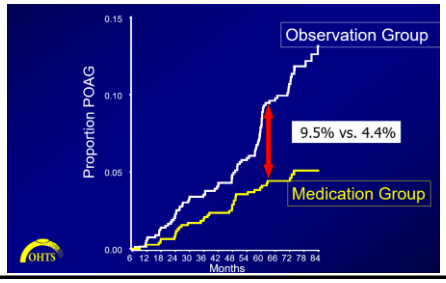
Results: In univariate analyses, baseline factors that predicted the development of POAG included older age, [illegible] (African American), sex (male), larger vertical cup-disc ratio, larger horizontal cup-disc ratio, higher intraocular pressure, greater Humphrey visual field pattern standard deviation, heart disease, and thinner central corneal measurement. In multivariate analyses, baseline factors that predicted the development of POAG included older age, larger vertical or horizontal cup-disc ratio, higher intraocular pressure, greater pattern standard deviation, and thinner central corneal measurement.

Conclusions: Baseline age, vertical and horizontal cup-disc ratio, pattern standard deviation, and intraocular pressure were good predictors for the onset of POAG in the OHTS. Central corneal thickness was found to be a powerful predictor for the development of POAG.

Arch Ophthalmol. 2002;120:714-720

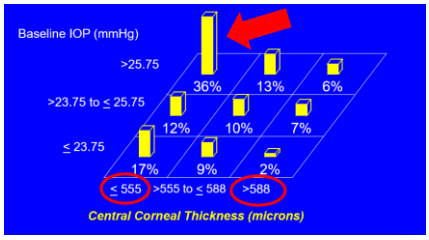
Percent POAG Endpoints

(patients that developed glaucoma)



Percent of subjects that Developed POAG, by Central Corneal Thickness and Baseline IOP

OHTS Data



Kass MA, Heuer DK, Higginbotham EJ, Johnson CA, Keltner JL, Miller JP, Parrish RK 2nd, Wilson MR, Gordon MO. Arch Ophthalmol. 2002 Jun;120(6):701-13

OHTS: 20 Year Data

JAMA Ophthalmology | Original Investigation

Assessment of Cumulative Incidence and Severity of Primary Open-Angle Glaucoma Among Participants in the Ocular Hypertension Treatment Study After 20 Years of Follow-up

Reaffirms earlier results.

CONCLUSIONS AND RELEVANCE In this study, only one-fourth of participants in the Ocular Hypertension Treatment Study developed visual field loss in either eye over long-term follow-up. This information, together with a prediction model, may help clinicians and patients make informed personalized decisions about the management of ocular hypertension.

But they must be monitored.

Pachymetry: 3 Outcomes

- **Thin**: <555 µ High Risk
- **Average**: 555-588 µ No change in Risk
- **Thick**: >588 µ Low Risk

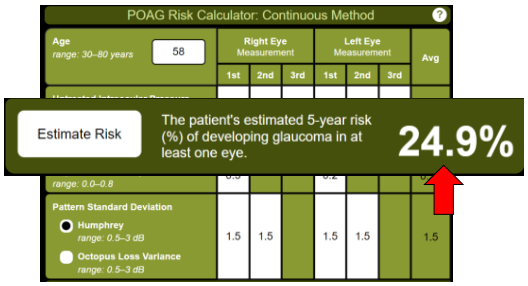
The predictions derived using these methods are designed to aid, but not to replace clinical judgment.

OHTS Risk Calculator (free online)

POAG Risk Calculator: Continuous Method

Age range: 30–80 years	58	Right Eye Measurement			Left Eye Measurement			Avg
		1st	2nd	3rd	1st	2nd	3rd	
Untreated Intraocular Pressure range: 20–32 mm Hg		26	26	26	25	25	25	25.5
Central Corneal Thickness range: 475–658 µm		483	483	483	493	493	493	488
Cup to Disc Ratio by Contour range: 0.0–0.8		0.3			0.2			0.25
Pattern Standard Deviation								
Humphrey range: 0.5–3 dB		1.5	1.5		1.5	1.5		1.5
Octopus Loss Variance range: 0.5–3 dB								

OHTS Risk Calculator



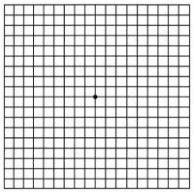
Guideline for % Risk of Developing POAG ★

Expert Panel Recommendations	
< 5%	No treatment
5-15%	Treatment optional
>15%	Treatment recommended

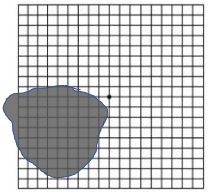
- These are suggested guidelines only, treat every case individually
  - Must consider other factors: Family History, Age,

5 years later: CC = "blurry spot in right eye"

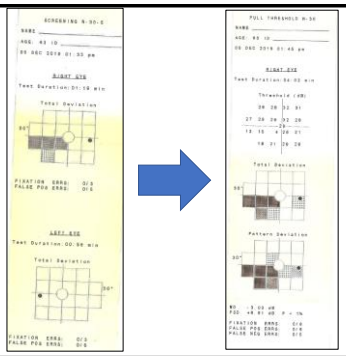
Left Eye:



Right Eye:

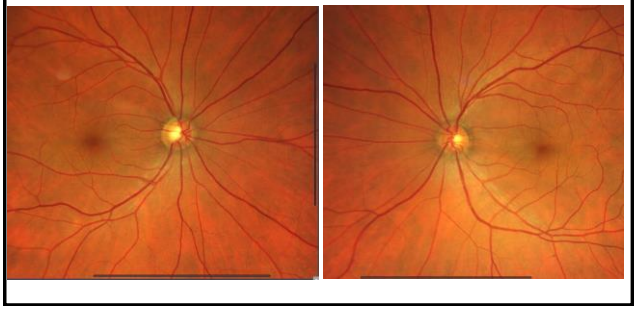


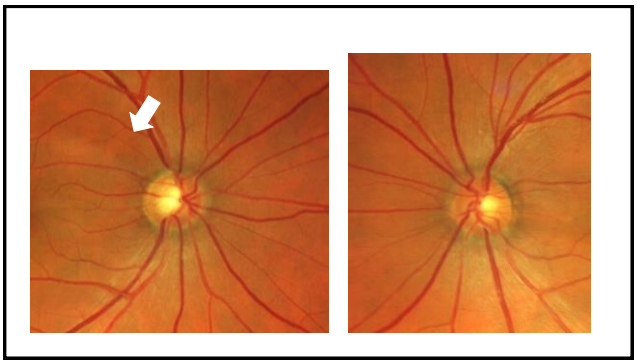
FDT

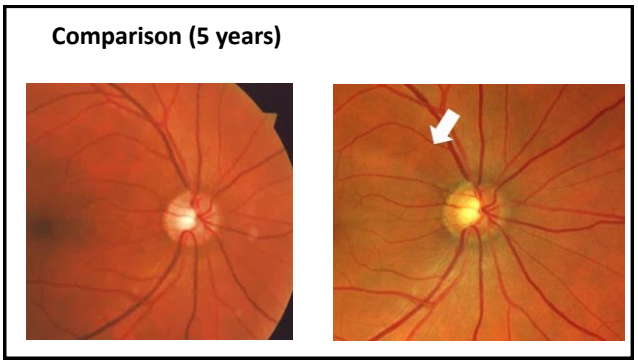


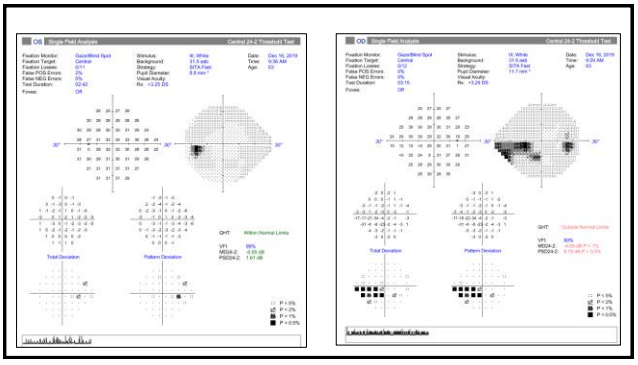
Five Years Later: Data

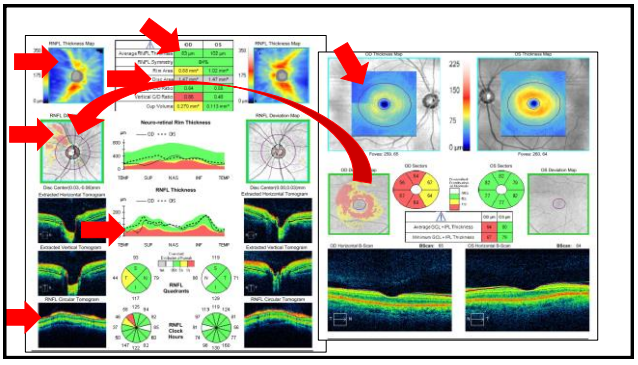
- IOP
  - **32 OD**
  - **30 OS**
- Central Corneal Thickness CCT
  - 510 microns
  - 515 microns
  - Ultrasound device vs OCT
- Family History
  - 1-2 members with OHTN/POAG
- **Gonioscopy**
  - Open to Ciliary Body
  - Light Pigment

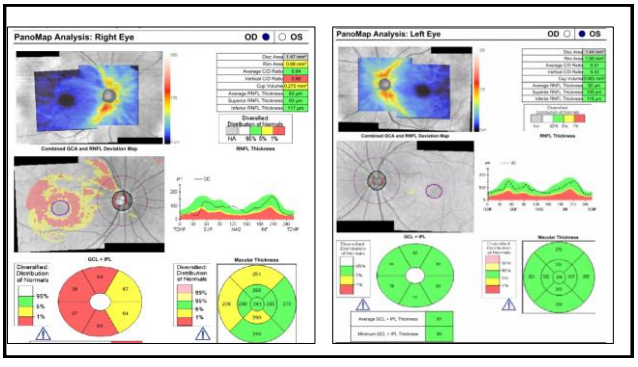


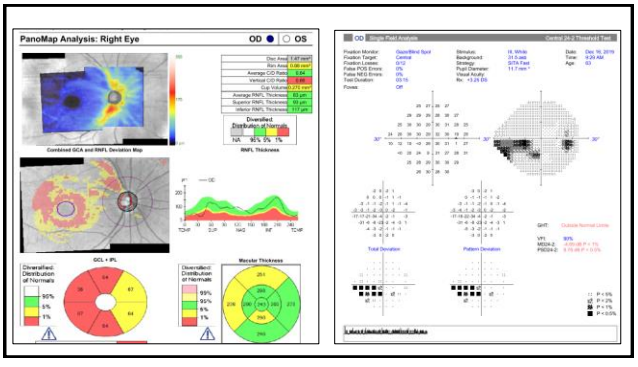


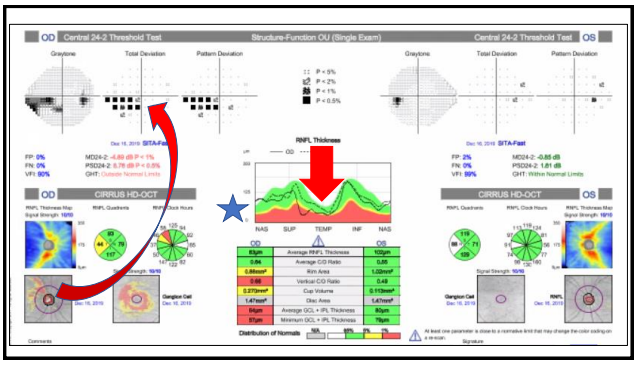

Comparison (5 years)

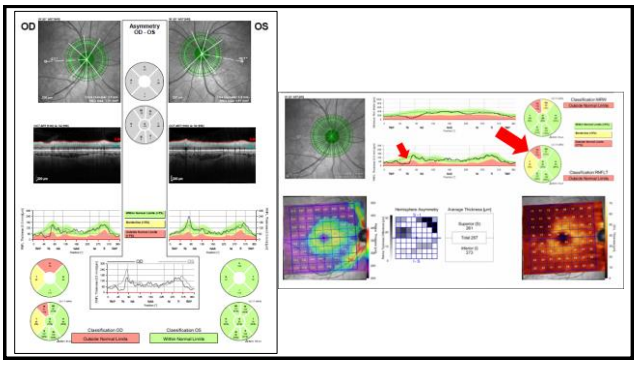


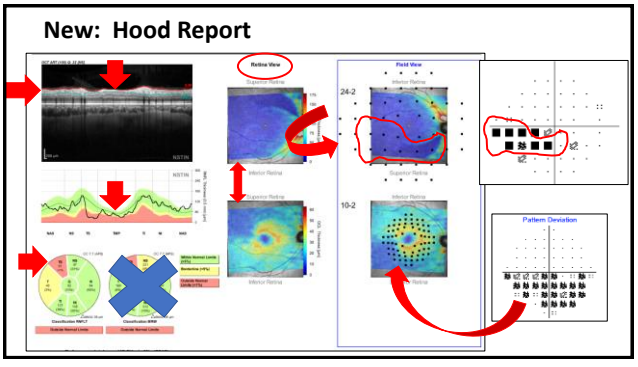


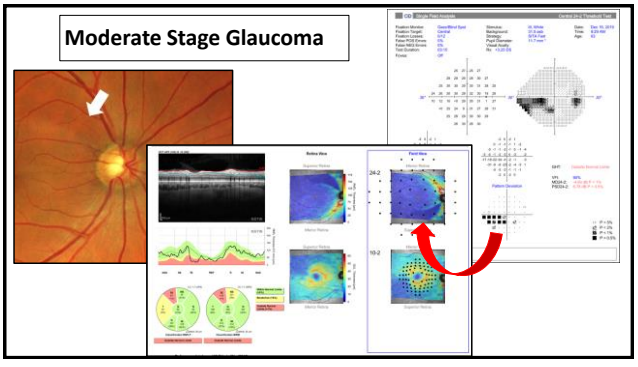

PanoMap Analysis: Right Eye
OD
OS
PanoMap Analysis: Left Eye
OD
OS

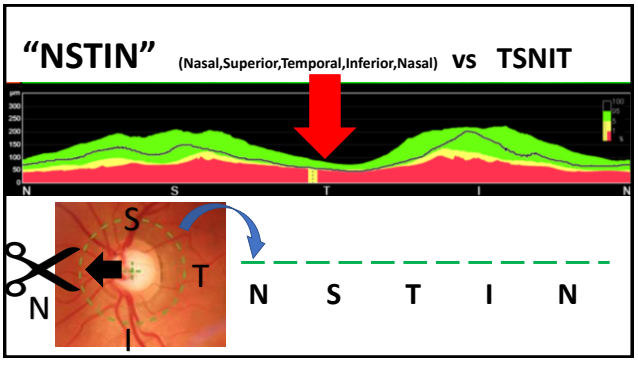

PanoMap Analysis: Right Eye
OD
OS







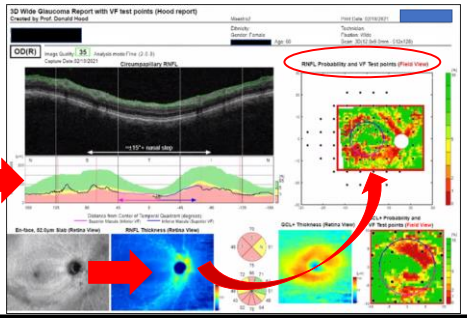


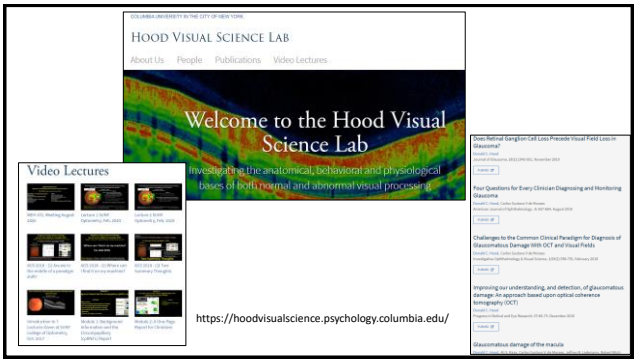


Why such detailed comparison between OCT and visual fields?

- Having good (not always perfect) correlation between structural loss (RNFL and GCC) and VF (24-2, 20-2), significantly improves diagnostic accuracy.
- Reason why you might **NOT** identify correlation:
  - Artifact from poor test quality, reliability.
  - Artifact from other disease, optic nerve, retina and other
  - Need to repeat and improve data when possible. Don't try interpret bad data.
- Early glaucoma does sometimes show damage first on OCT, less commonly on VF only.
  - This can be reduced by doing macular ganglion cell scans and 10-2 VFs.

Hood Report (different patient, different OCT)



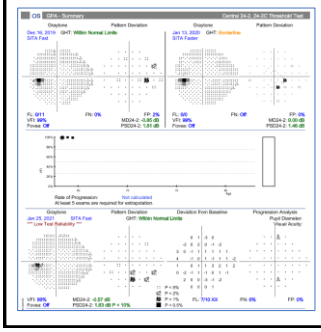


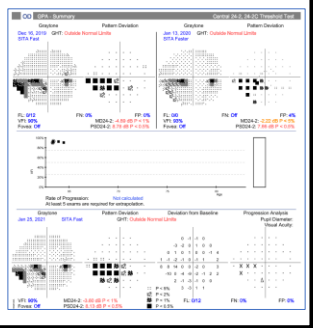
Diagnosis: POAG
Treatment and Management

Initiate Treatment:	Follow Up:
• Target IOP:	• Future Follow Up and Testing:
• Medication Options: • Coming up	• Visual Fields?

Treatment and Management

	Follow Up
• Target IOP:	• Vyzulta qAM OU
• Medication Options:	• 18 mmHg OD • 17 OS
	• Future Follow Up and Testing:





Target IOP Based on Disease Stage

- Established based upon ONH, OCT and visual field status (stage) + pre-treatment IOP, age
  - Can roughly follow the ICD-10 coding definitions
  - High risk patients may need more aggressive treatment earlier in the course of the disease

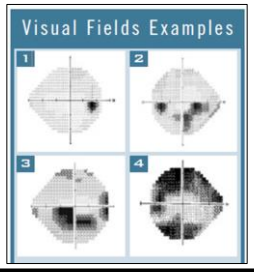
No visual field loss!

• Mild/Early:	25-30% Reduction
• Moderate:	30-35% Reduction
• Severe/Advanced:	40% + Reduction

Staging Glaucoma Disease

Mild

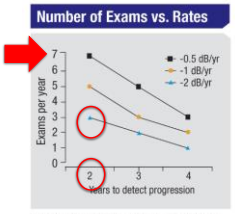
Severe



Moderate

Severe

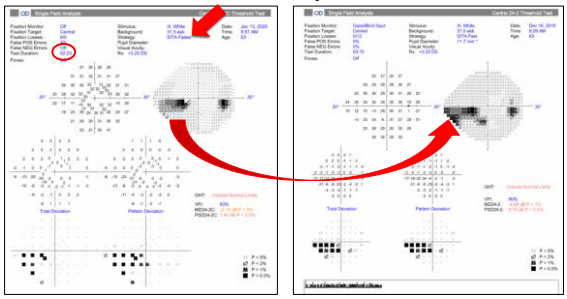
How many VF tests needed to detect change?



The number of examinations required per year to detect various rates of change. (Based on Chauhan, 2008.[1])

- General Guideline:
  - For patient @ -2dB / yr
  - 6 tests over 2 years (q4m)

Second VF with new 24-2C pattern (Humphrey Field Analyzer)

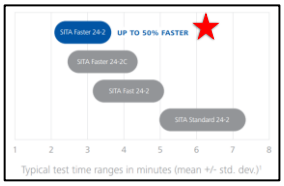


Updates in Perimetry

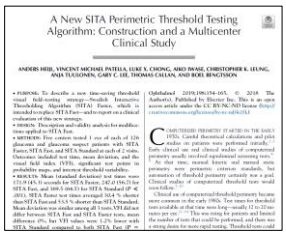
- Traditional Bowl
  - Faster and with Central Points added to 24-2 grid pattern

- VR Headset
  - A new modality with many options and potential benefits

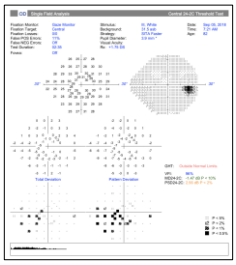
SITA Faster: Same Results, Less Test Time

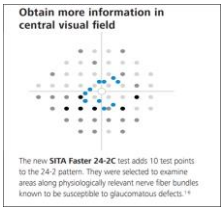


SITA Faster testing takes about two-thirds of the time required by SITA Fast and about half the time required by SITA Standard.


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

The Newest Standard: 24-2C SITA Faster





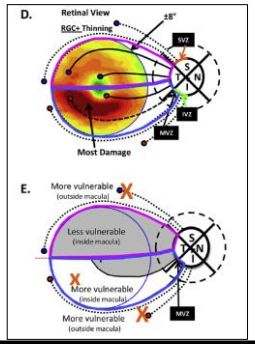
The 24-2C is able to detect visual field loss in the central 10° that corroborates with loss detected in the 10-2 pattern. The 24-2C exhibits potential to be used as a hybrid between the 24-2 and 10-2 to better evaluate visual field defects.

Don Hood, PhD.


Progress in Retinal and Eye Research

Improving our understanding, and detection, of glaucomatous damage: An approach based upon optical coherence tomography (OCT)

Donald C. Hood



Progress in Retinal and Eye Research 57 (2017) 46e75

24-2C and 10-2: Several Recent Publications

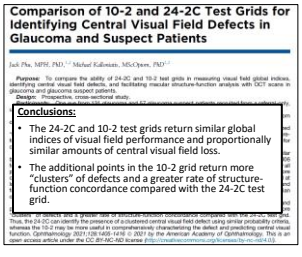

Qualitative Evaluation of the 10-2 and 24-2 Visual Field Tests for Detecting Central Visual Field Abnormalities in Glaucoma

CONCLUSIONS:

- The similarity in performance of the 10-2 and C24-2 test suggests that the increased sampling density of the former does not significantly improve the detection of central visual field abnormalities, even when based on expert assessment.
- These findings should not be taken to mean that the 10-2 test is not useful, but it underscores the need for its utility to be clearly established before incorporating it as routine glaucoma standard of

Am J Ophthalmol. 2021 Sep;229:26-33. doi: 10.1016

Comparison of 10-2 and 24-2C Test Grids for Identifying Central Visual Field Defects in Glaucoma and Suspect Patients


Jack Phu, MPSF, PhD,[1,2] Michael Kalloniatis, MSc(Optom), PhD[1,2]

Purpose: To compare the ability of 24-2C and 10-2 test grids in measuring visual field global indices, identifying central visual field defects, and facilitating macular structure-function analysis with OCT scans in glaucoma and glaucoma suspect patients.

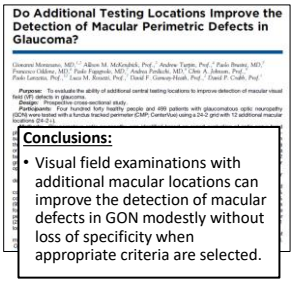
Design: Prospective, cross-sectional study.

Conclusions:

- The 24-2C and 10-2 test grids return similar global indices of visual field performance and proportionally similar amounts of central visual field loss.
- The additional points in the 10-2 grid return more "clusters" of defects and a greater rate of structure-function concordance compared with the 24-2C test grid.

Ophthalmology. 2021 Oct;128(10):1405-1416

Do Additional Testing Locations Improve the Detection of Macular Perimetric Defects in Glaucoma?


Giovanni Montesano, MD,[1,2] Allison M. McKendrick, PhD,[3] Andrew Turpin, PhD,[4] Paolo Brunet, MD,[5] Francesco Oddone, MD,[5] Paolo Fogagnolo, MD,[5] Andrea Perdicchi, MD,[5] Chris A. Johnson, PhD,[6] Paolo Lanzetta, PhD,[1,2] Luca M. Rossetti, PhD,[5] David F. Garway-Heath, PhD,[7] David P. Crabb, PhD[7]

Purpose: To evaluate the ability of additional central testing locations to improve detection of macular visual field (VF) defects in glaucoma.

Design: Prospective cross-sectional study.

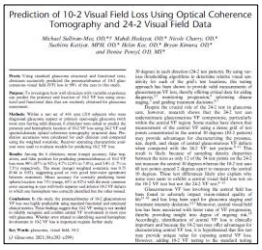
Participants: Four hundred forty healthy people and 499 patients with glaucomatous optic neuropathy (GON) were tested with a fundus tracked perimeter (CMP; CenterVue) using a 24-2 grid with 12 additional macular points (24-2C).

Conclusions:

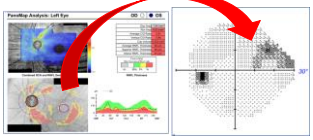
- Visual field examinations with additional macular locations can improve the detection of macular defects in GON modestly without loss of specificity when appropriate criteria are selected.

Ophthalmology 2021;128:1722-1735

Prediction can be ***helped*** by combining OCT


Prediction of 10-2 Visual Field Loss Using Optical Coherence Tomography and 24-2 Visual Field Data

- Conclusions:
- In this study, the presence/absence of 10-2 glaucomatous VF loss was highly predictable using standard functional and structural clinical metrics.
- These findings suggest that 10-2 VF testing is not needed to reliably recognize and confirm central VF involvement in most eyes with glaucoma.



J Glaucoma 2021;30:e292–e299

VR Perimetry

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

Visual Field:

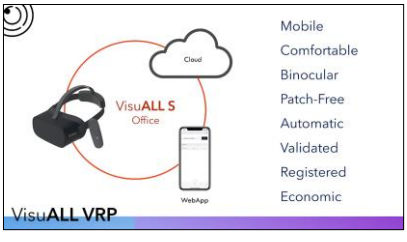
- All common protocols e.g. 24-2, 10-2, 30-2, etc).
- Testing time is about 3 minutes for threshold and 45 seconds for screening.
- 24-2c protocol which combines 24-2 and key 10-2 locations.
- Ptosis, Esterman.

Additionally:

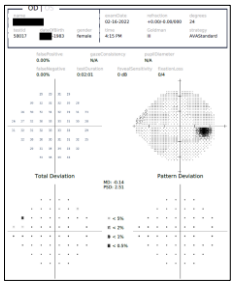
- Visual Acuity (near and far acuity).
- Color Vision (D-15).
- Pediatrics Visual Field.
- Contrast Sensitivity.
- LCVA (Low Contrast Visual Acuity)

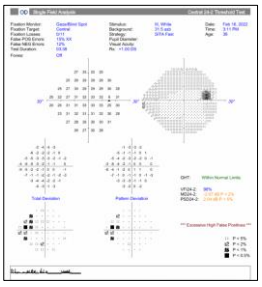
J Glaucoma 2021;30:17–23

Cloud and App Based

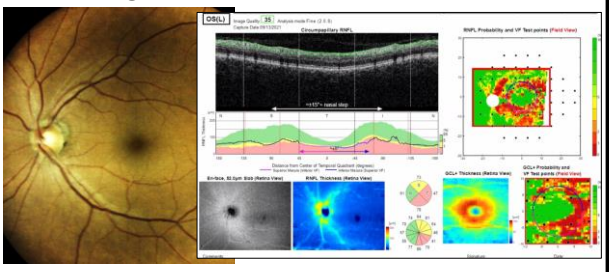


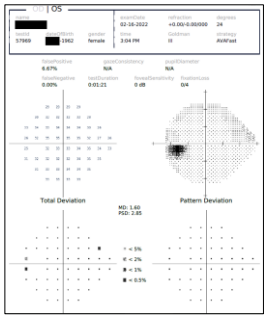
AVAStd vs SITA-Fast

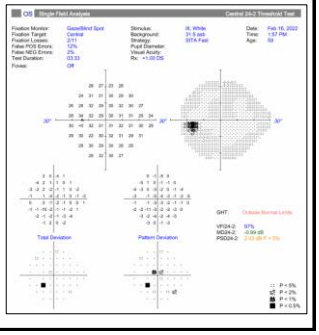




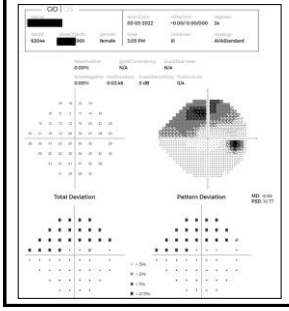
Mild Stage/Pre-Perimetric

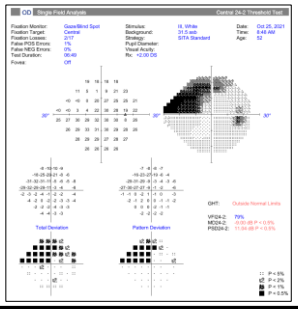


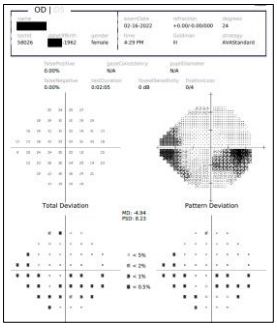


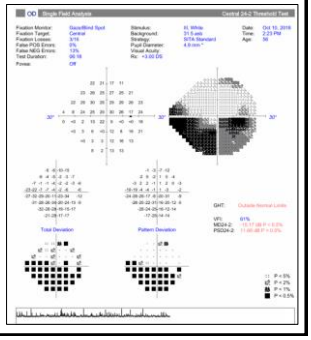


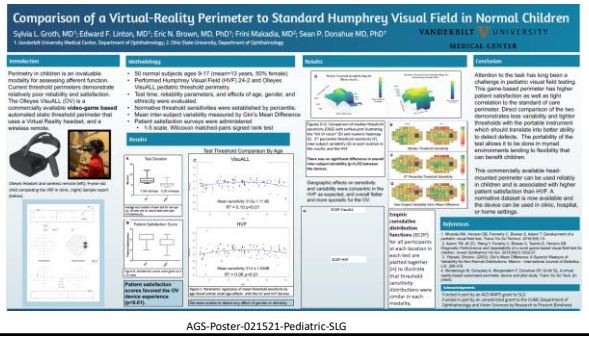
50% test time











AGS-Poster-021521-Pediatric-SLG

VR Perimtery: Limitations

- Need to identify optimal patient type
- Limited dynamic range
  - Not yet geared for moderate and severe VF defects
- Further, wide scale validation required
- No progression analysis (yet)
- Many new devices are now available, shop and investigate carefully

CASE 2

62 yo, H,M

Treated for glaucoma in the past.

Then was told that there was no glaucoma and treatment was stopped.

No exam for 4 years. Wanted to avoid glaucoma meds.

No family history of glaucoma.

High blood pressure, non-compliant w/meds.

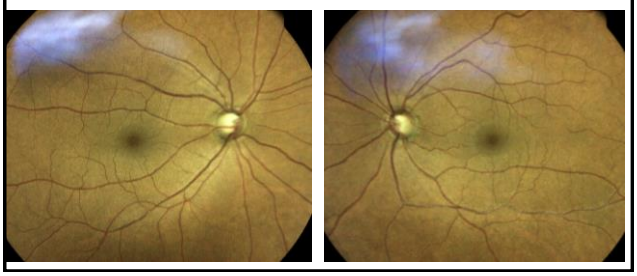
2019 Data

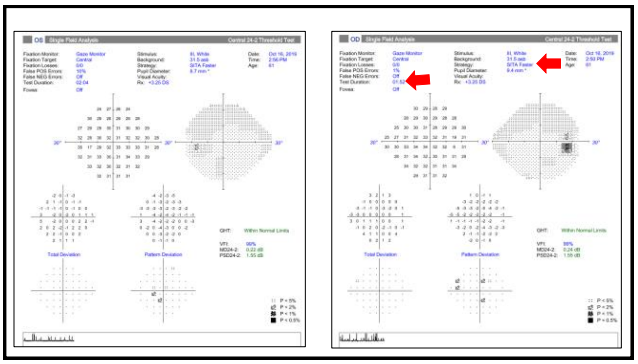
- IOP
  - **25 OD**
  - **24 OS**
- Family History
  - none
- Central Corneal Thickness CCT
  - **548 microns**
  - **550 microns**
- Gonioscopy
  - Open to Ciliary Body
  - Light Pigment

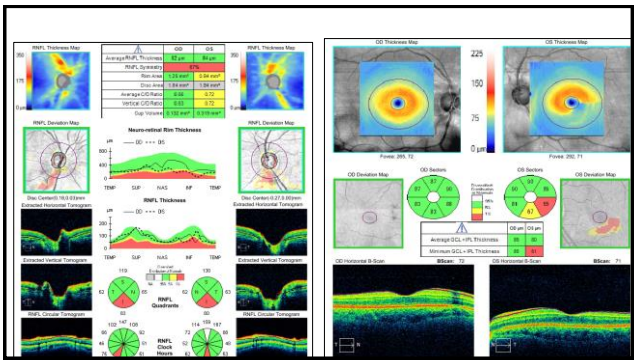
BACK to CASE:

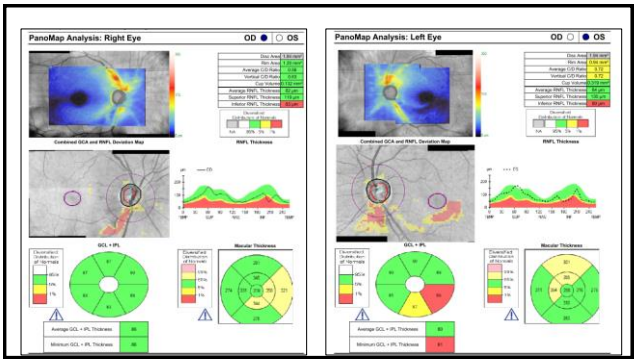
Visual Fields and OCT

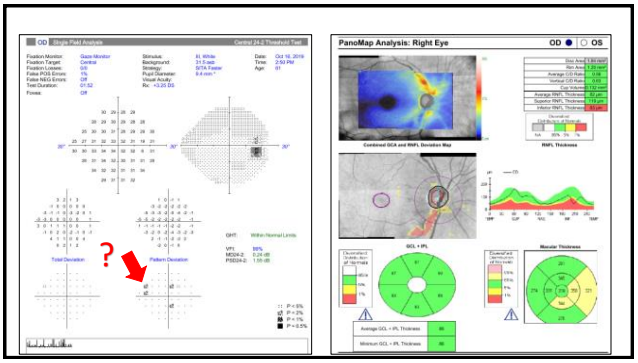
Fundus Images (Eidon WideField)

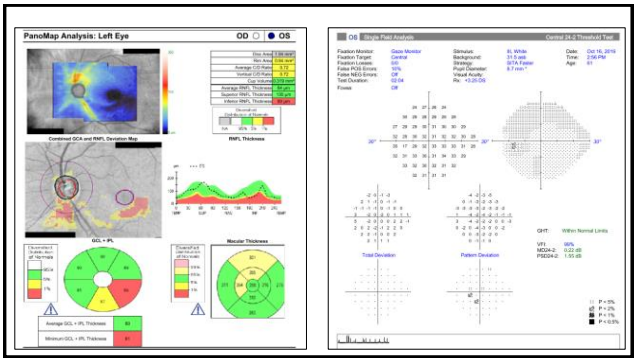












Management and Discussion

Established medication options:

New Medications Options in past 3 years:

Non-Medical Options:

Laser in Glaucoma and ocular Hypertension Trial

LIGHT STUDY OUTCOMES

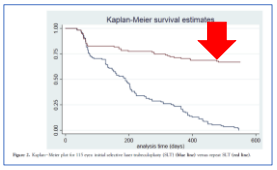
- Both groups showed similar efficacy in lowering IOP
  - 16.3mm Hg Drop group, 16.6 mm Hg SLT Group
  - 78.2% SLT group required no drops, 12% required 1 drop
  - 64.6% drop group controlled on 1 drop, 18.5% required 2 drops
  - 0% SLT Group required trab, 3.5% Drop group required trab
  - 93% SLT group at target IOP, 99% Drop group
- SLT Group spent 202 pounds less on care
- So what does this mean for us , our clinics and our patients??

Selective laser trabeculoplasty versus eye drops for first-line treatment of ocular hypertension and glaucoma (LiGHT): a multicentre randomised controlled trial

Lancet 2019; 393: 1505–16

Repeat SLT was Effective Also

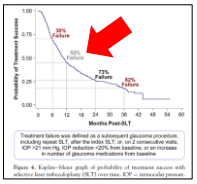
Efficacy of Repeat Selective Laser Trabeculoplasty in Medication-Naive Open-Angle Glaucoma and Ocular Hypertension during the LiGHT Trial



Ophthalmology 2020;127:467-476

Is this Trial applicable to "Real World" Patients?

Real-World Outcomes of Selective Laser Trabeculoplasty in the United Kingdom



Conclusions:

- Most patients initially responded to SLT, but the majority failed within 1 year.
- Efficacy of SLT was better in patients with higher baseline IOP but did not differ by glaucoma severity or concurrent use of IOP lowering medication.

Does SLT need post-op meds??

SALT Trial: Steroids after Laser Trabeculoplasty

Impact of Short-Term Anti-inflammatory Treatment on Selective Laser Trabeculoplasty Efficacy

- Patients treated with steroid or NSAID (QIDx 4 days) had lower IOP at 12 weeks vs. tears
  - ~ -6.2; 5.2; vs. 3.0 mmHg
- MOA is still not clear
- Several study limitations
- Just an "indication" at this time, not definitive.

Initial Medications vs. Primary SLT

The Case for First-line Drops

- Efficacy
  - Meds can have advantage
    - 30% decrease IOP vs 20-25%
- No risk of a postoperative pressure spike.
- Patient Fears
- Patients are more motivated to return

Pros for SLT

- Studies support the use of laser before medications.
- Doing SLT first may avoid the side effects of topical medications, including dry eye.
- Poor drop compliance puts the patient at risk.
- SLT doesn't make the patient see himself as sick.

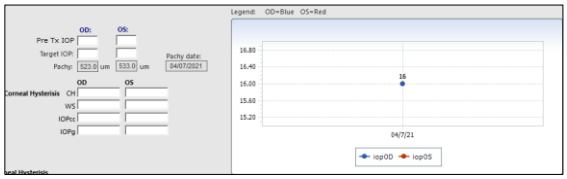
CASE 3

44 yo, Black, Male
from Nigeria
Last exam at Vision Center 1 month earlier
"large cupping"

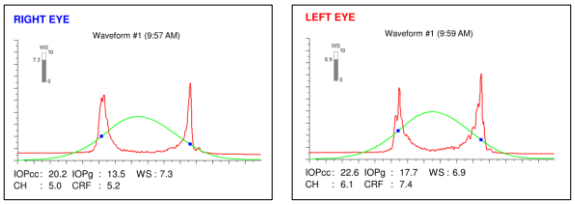
History and Clinical Data

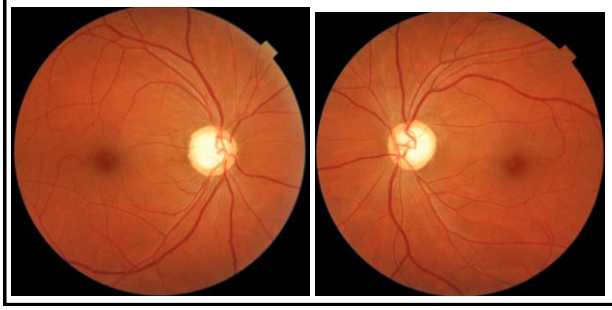
- Family History
  - Mother with POAG
    - On multiple topical meds
- Medical History
  - Good Health, No meds,
  - BP= 125/84
- VA = 20/20 OD, OS
- Entrance Tests = normal
- Slit Lamp Exam = unremarkable
- IOP
  - 16 OD mmHg @ 9:00 AM
  - 16 OS
- Gonioscopy
  - Open to Ciliary Body 360 OU
  - Moderate Pigment

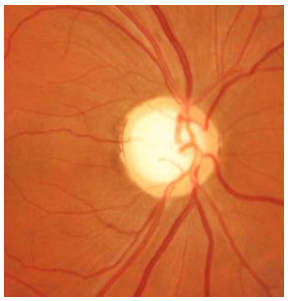
Pachymetry / Tonometry

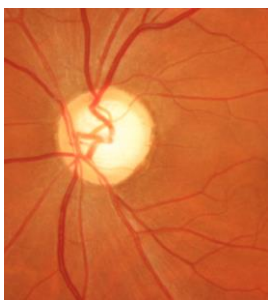


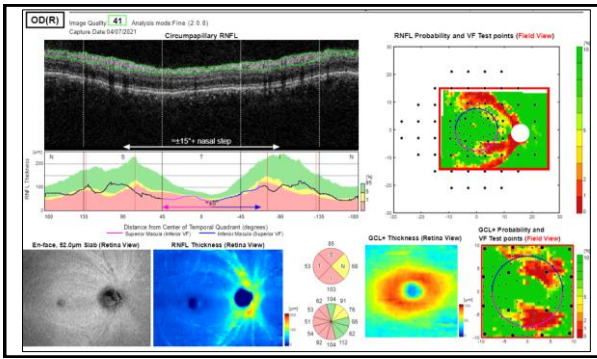
Hysteresis: 5.0 OD, 6.1 OS

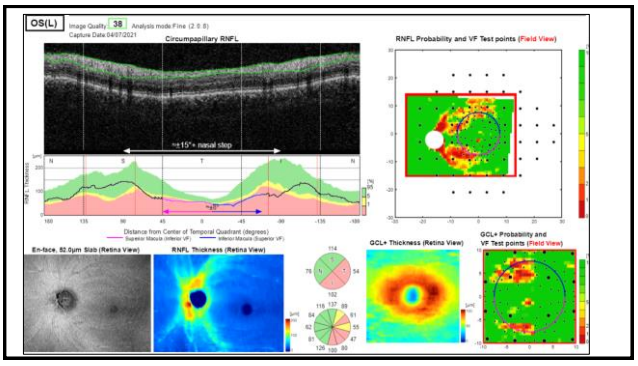


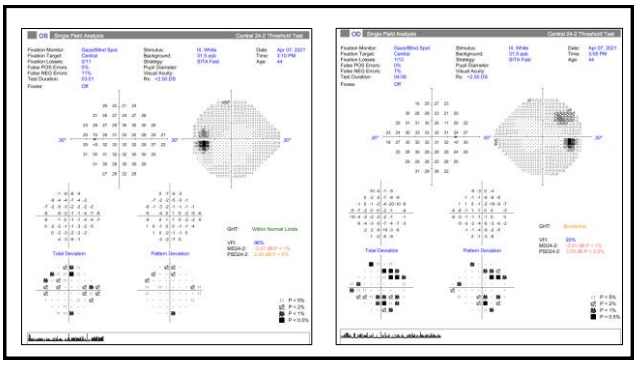


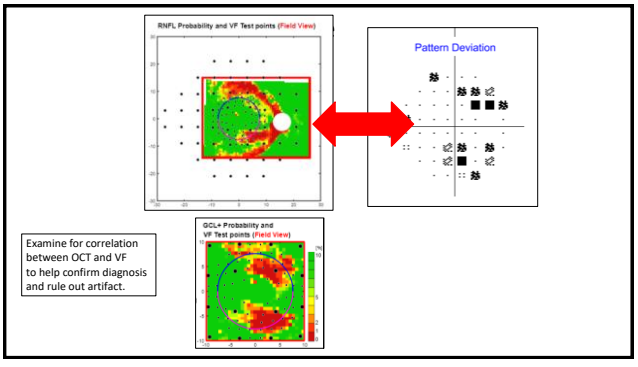


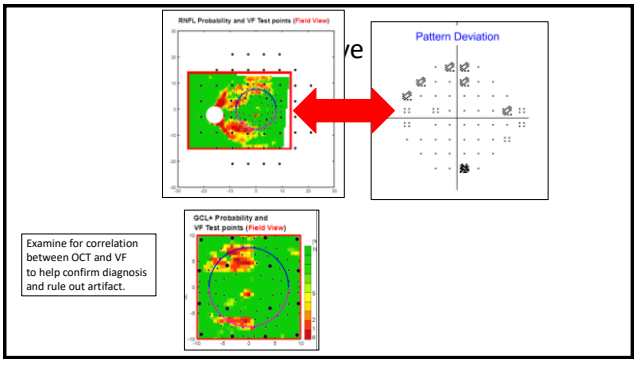





OS(L)
Circumpapillary RNFL
RNFL Probability and VF Test points (Field View)
En-face, 82.0µm Slab (Retina View)
RNFL Thickness (Retina View)
GCL Thickness (Retina View)
GCL+ Probability and VF Test points (Field View)




RNFL Probability and VF Test points (Field View)
Pattern Deviation
GCL+ Probability and VF Test points (Field View)
Examine for correlation between OCT and VF to help confirm diagnosis and rule out artifact.


RNFL Probability and VF Test points (Field View)
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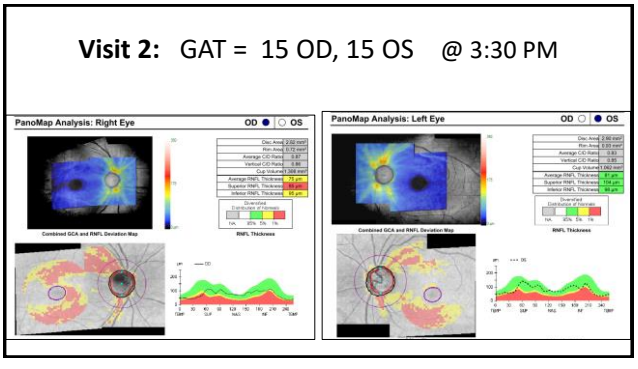
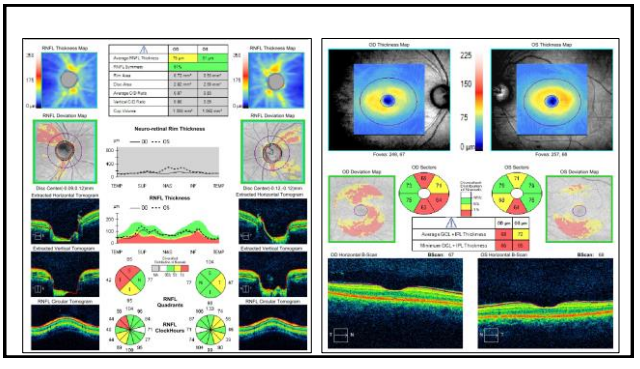
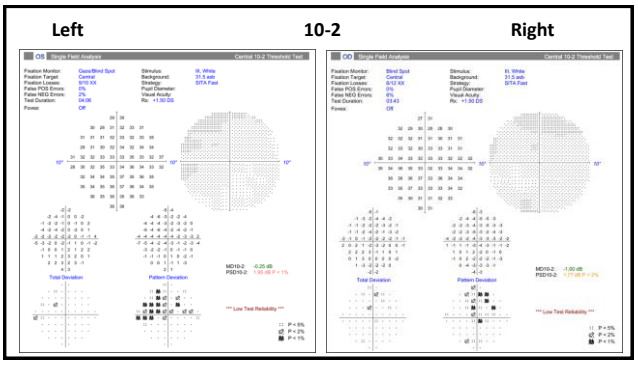
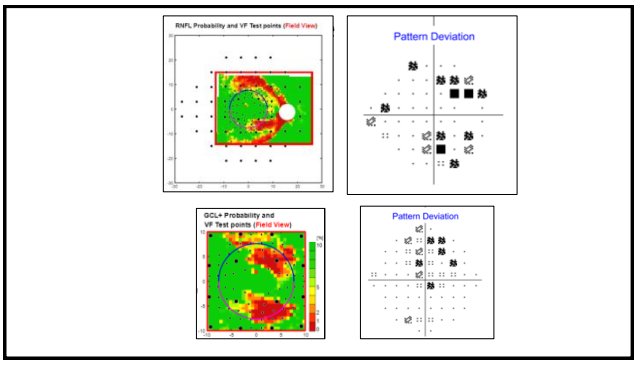
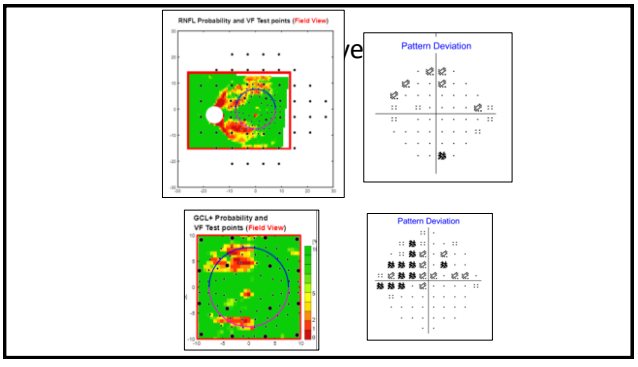

Visit 2: GAT = 15 OD, 15 OS @ 3:30 PM
PanoMap Analysis: Right Eye
OD ● OS
PanoMap Analysis: Left Eye
OD ○ ● OS







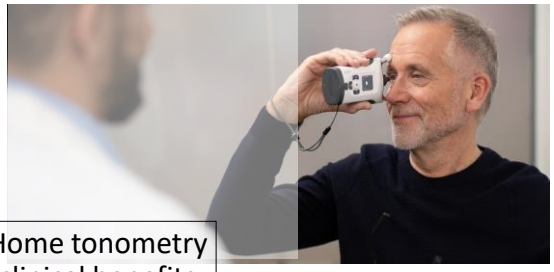


Third Visit IOP: @ 9:00 AM

In Office IOP Measurement is too infrequent.

MANAGEMENT AND DISCUSSION

Patients with normal IOP and glaucoma can be more difficult.
Get multiple IOP measures prior to initiating treatment.
Pursue using a Home Tonometry device.
Identify what is the real IOP curve?



Home tonometry clinical benefits

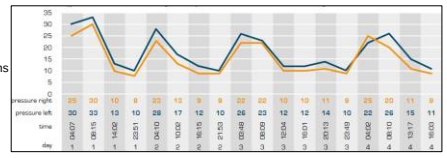
Easy IOP self-measurement

Ease of use

- IOP measurements while in supine, reclined and sitting positions; iCare HOME only in sitting position
- New design decreases training time
- Guidance in positional and error situations are clearly displayed on the screen
- Probe insertion made easy with the help of probe applicator
- Labeling materials enable self-learning; healthcare professional can provide further guidance if needed

Importance of diurnal IOP monitoring

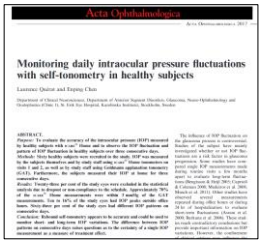
- IOP varies throughout the day and night
- The range of IOP fluctuations in glaucoma patients is 3 times higher than in normal subjects[1]
- IOP variation in normal eyes is 2-6 mmHg whereas in glaucoma patients can be 10 mmHg or more[2]



1 Drance SM. Diurnal variation of intraocular pressure in treated glaucoma. Significance in patients with chronic simple glaucoma. Arch Ophthalmol. 1963;70:302–311.
2 Bonomi L, Marchini G, Marraffa M, et al. Prevalence of glaucoma and intraocular pressure distribution in a defined population. The Egna-Neumarkt Study. Ophthalmology. 1998;105(2):209-15

IOP spikes often occur outside of office hours

- IOP peaks outside of office hours have been reported in 66%, 69% and 52% of glaucoma patients in different studies1,2,3
- Querat et al. reported that 63% of study eyes had different daily IOP patterns on different days4
- Studies indicate when performing only sporadic IOP measurements during office hours a few times a year there is a high probability of missing important IOP


Acta Ophthalmologica

Monitoring daily intraocular pressure fluctuations with self-tonometry in healthy subjects

Laurence Querat and Enping Chen

1Barkana et al. Clinical utility of intraocular pressure monitoring outside of normal office hours in patients with glaucoma. Arch Ophthalmol. 2006;124(6):793-797
2Nakakura et al. Relation between office intraocular pressure and 24-hour intraocular pressure in patients with primary open-angle glaucoma treated with a combination of topical antiglaucoma eye drops. J Glaucoma 2007 Mar;16(2):201-4.
3Hughes E et al. 24-hour monitoring of intraocular pressure in glaucoma management: A retrospective review. J Glaucoma 2003;12(3):232-236
4Querat et al. Monitoring daily intraocular pressure fluctuations with self-tonometry in healthy subjects, Acta Ophthalmol. 2017 Aug;95(5):525-529.

Home Self Tonometry

Glaucoma management based on real-world IOP information.

Self Tonometry at Home. Monitoring can help in

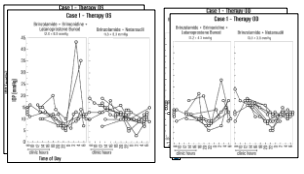
- Understanding why some patients progress, despite stable in-office IOPs[14-16]
- Improving patient compliance to medication[17]
- Finding the optimal medication and instillation schedule[12]
- Assessing the need for and the effectiveness of surgery[13,14]
- Providing supporting data for teleophthalmology consultations

Cvenkel B, Velkovska MA and Jordanova VD, Self-measurement with Icare HOME tonometer, patients' feasibility and acceptability, Eur J Ophthalmol 2019 Jan 11:1120672118823124
Mihailovic N, Termühlen J, Alnawaiseh M, Eter N, Dietlein TS, Rosentreter A. Ease of handling of first and second generation rebound tonometers. Ophthalmologe 2016 Apr;113(4):314-20.
Rojas CD, Reed DM, Morsi SE, Usefulness of Icare Home in Telemedicine Workflow to Detect Real-World Intraocular Pressure Response to Glaucoma Medication Change. Ophthalmol Glaucoma. 2020 Sep-Oct;3(5):403-405.
Avadiallo M S, Qassim A, Hassall M, Nguyen T, Landers J, Craig J, Using Icare® HOME tonometry for follow-up of patients with open-angle glaucoma before and after selective laser trabeculoplasty, Clin Exp Ophthalmol 2020 Apr; 48(3):328-333

Patient case:

Assessing drug efficacy with Home-Self-Tonometry

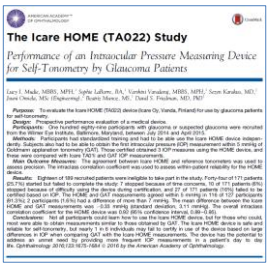
- A 72-year-old male with pseudoexfoliation glaucoma
- Left eye progressing with an IOP range of 10 to 16 mmHg in office measurements
- With HOME monitoring outside of office hours, IOP peak is 28 mmHg in the right eye and 43 mmHg in the left eye were seen with the one medication.
- After adding the second medication, highest IOPs measured with HOME reduced to 19 mmHg in the right eye and 17 mmHg in the left eye.



Rojas CD, Reed DM, Morsi SE. Usefulness of Icare Home in Telemedicine Workflow to Detect Real-World Intraocular Pressure Response to Glaucoma Medication Change. Ophthalmol Glaucoma. 2020 Sep-Oct;3(5):403-405.

Icare HOME Study: 2016

- 171 patients
  - 10 (6%) stopped b/c of difficulty in using the device
  - *27 (16%) unable to achieve certification*
- HOME and GAT were within 5 mmHg
  - 116 of 127 patients (92%)
  - MD of -0.33 mmHg (SD 3 mmHg)
- No corneal abrasions or adverse events


The Icare HOME (TA022) Study

Performance of an Intraocular Pressure Measuring Device for Self-Tonometry by Glaucoma Patients

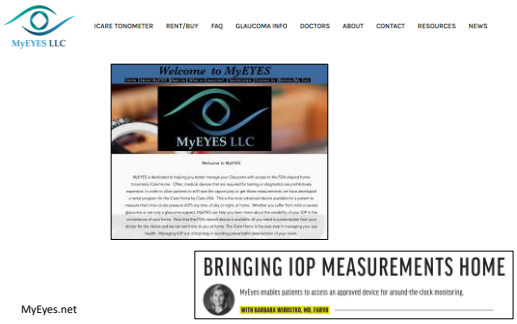
Ophthalmology 2016;123:1675-1684

Home Self Tonometry vs. Clinic Tonometry


Home Self-tonometry Trials Compared with Clinic Tonometry in Patients with Glaucoma

- Self-tonometry provides IOP data that supplements in-clinic tonometry and would not be detectable over daytime in-clinic diurnal curves.
- A subset of patients in whom home tonometry was ordered by their glaucoma clinician because of suspicion of occult IOP elevation demonstrated reproducible IOP elevation outside of the clinic setting.
- Such patients tended to be younger and male and not to have undergone previous filtering surgery.

Ophthalmology Glaucoma 2021;4:569-580

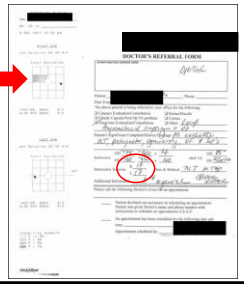


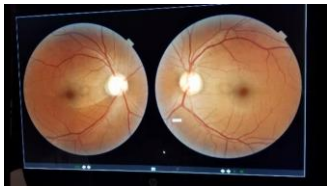
CASE DISCUSSION:
TREAT OR MONITOR?

CASE 4

43 year old male
Referred for Possible Open Angle Glaucoma

Clinical Background: Referral


DOCTOR'S REFERRAL FORM

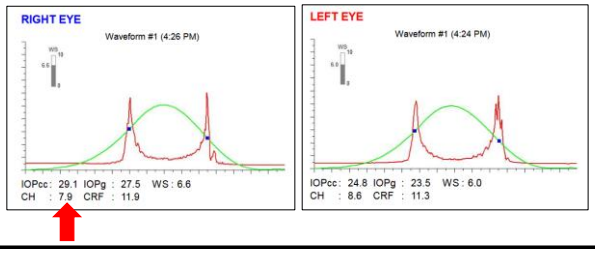


Clinical Background:

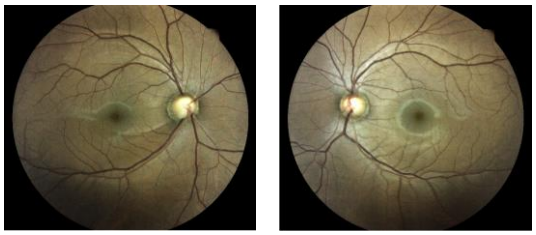
- BCVA: 20/20 OD and OS
- Entrance Tests: all normal
- Slit Lamp:
  - Normal anterior segment
- Gonioscopy:
  - Open angles, SS/CB, 360 OU

- IOP
  - First Visit:
    - 21 OD and 21 OS
  - Second Visit (AM appt)
    - 22 OD and 22 OS
- CCT / Pachymetry
  - 481 OD and 487 OS
- Corneal Hysteresis:

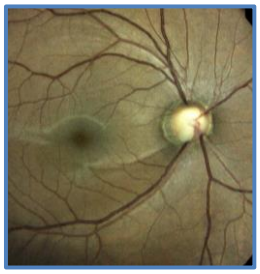
Low CH: 7.9 OD / 8.6 OS

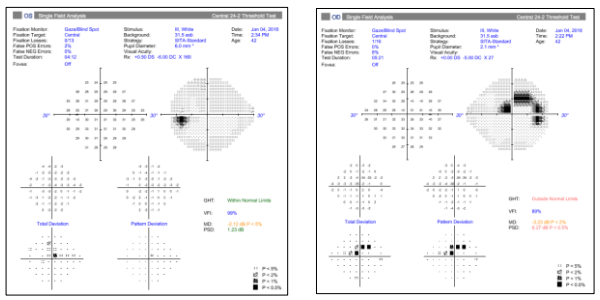


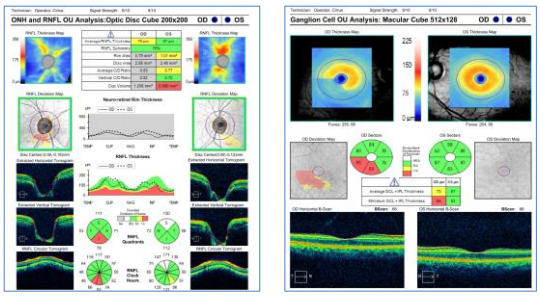
Photos: Eidon Wide Field (Centervue)

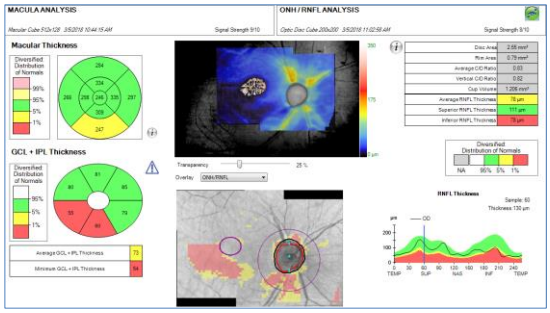


Good Fundus Cameras can identify RNFL Defects!









Discussion

- Young African American with strong family history of OAG
- Could earlier and routine Hysteresis findings helped earlier detection and treatment?
  - Low CH and VF findings certainly support very aggressive management.
- Treatment Options:
  - IOP in normal range can be more difficult to reduce
  - What are the treatment goals? What evidence supports this?
  - New Medications?

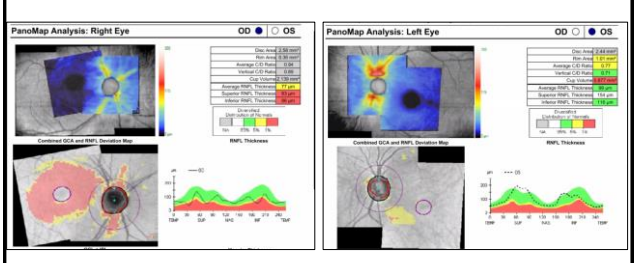
3 Week Follow Up

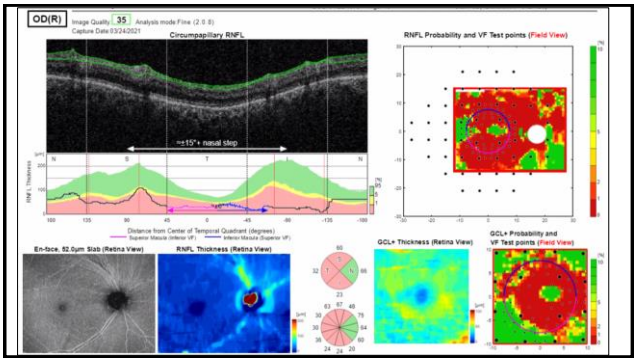
- **Latanoprostene bunod (Vyzulta) qAM OU**
  - **14 OD and 14 OS**
    - **-8 mmHg / -36%**
- Well tolerated, No side effects
- RTC in 2 months
- What other long term options?

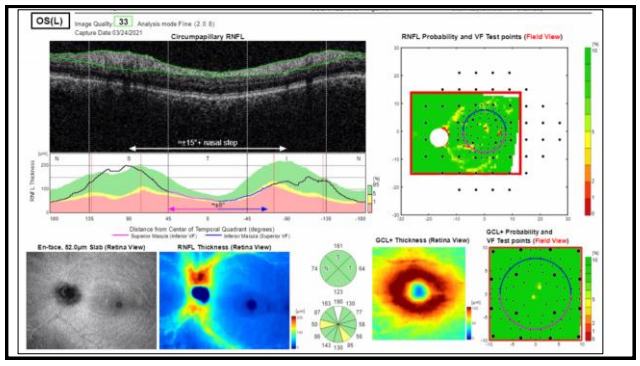
Lost to Follow Up / COVID

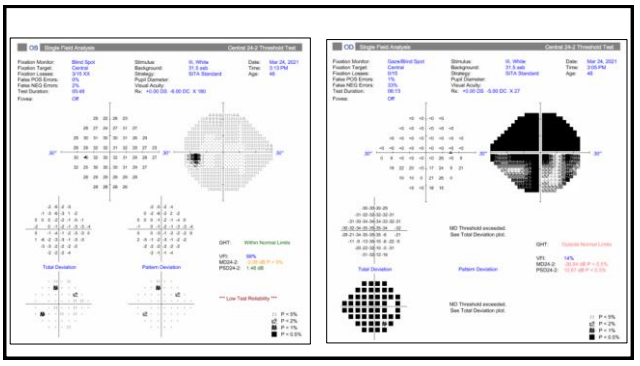
- Multiple Phones and Letters
- No response from patient
- Extended some Rx refills,
  - then no further requests
- **Three years later patient took off glasses for lens cleaning, happened to notice that vision in right eye was blurry.**
- Waited another 6 months and then called for appt.
- BCVA 20/50 OD 20/20 OS
- Entrance Tests:
  - + APD OD, CVF defects OD
- Slit Lamp: unremarkable
- **GAT: 31 mmHg OD 23 OS**

OCT Three Years Later

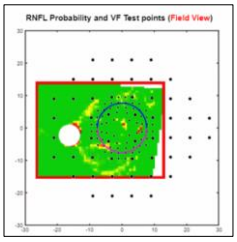


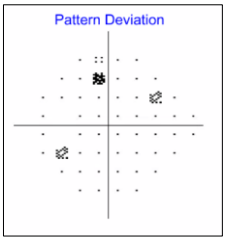




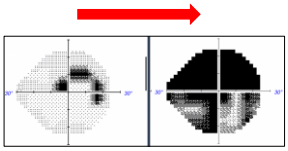


Left Eye?





Three Years. What Risk Factors Predicted this?



Who/when do you treat?

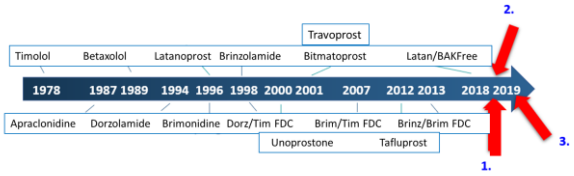
Confirmed Glaucoma Disease

- Optic nerve damage
  - photo/exam
- OCT loss consistent w/glaucoma
  - not red disease
- Corresponding Visual Field Loss
  - helps to confirm but is not required for diagnosis or initiating therapy
- IOP can be +/- 21 mmHg

No Confirmed Disease/Damage

1. Ocular Hypertension
   - Use pachymetry, <555m, has high risk guideline
   - Use OHTS risk calculator (online)
   - Initiate Tx for those w/high risk
2. IOP can be in normal range
   - Evaluate RFs and Diagnostic data
   - Weigh risks/benefits of treatment vs close observation

Medications to Treat Glaucoma:



1. **Latanoprostene bunod**
2. **Netarsudil**
3. **Netarsudil+latanoprost**

Thanks!

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