On behalf of Vision Expo, we sincerely thank you for being with us this year.

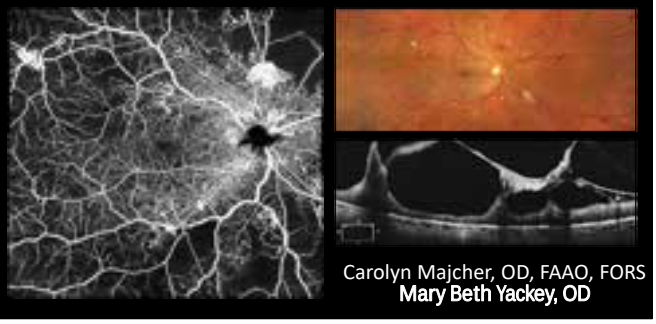
Reminder to Complete Your Session Evaluations!

Please be sure to complete your digital session evaluations for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.

vision expo

1

DIAGNOSIS DIABETES: THE OPTOMETRIC MANAGEMENT GUIDE



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2

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Disclosures:

- Paid consultant/speaker for:
  - Carl Zeiss Meditec
  - Regeneron Pharmaceuticals
  - Iveric Bio (Astellas)
  - Optomed
  - Apellis Pharmaceuticals
- Paid advisory board member for LENZ Therapeutics, Notal Vision, Topcon, Tarsus, Genentech

All relevant relationships have been mitigated

3

Contact:

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Disclosures:

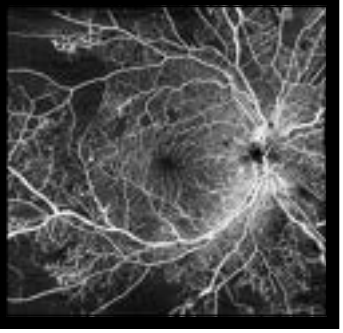
- Apellis: Advisory Board, Consultant, and Speaker
- Astellas/Iveric Bio: Advisory Board, Consultant, and Speaker
- Glaukos: Advisory Board
- Haag Streit: Advisory Board
- LKC: Advisory Board
- Notal Vision/FSH: Advisory Board and Consultant
- OcuTerra: Advisory Board
- Orasis/Qlosi: Advisory Board
- Reliance Medical Equipment: Advisory Board and Consultant
- Tarsus: Advisory Board
- Topcon: Advisory Board
- Visible Genomics: Advisory Board
- Zeiss: Advisory Board

All relevant relationships have been mitigated

4

OVERVIEW

- DR Standard of care documents
- Introduction to DM and DR, multimodal imaging technologies
- DR staging/classification
- DR management and role of imaging
  1. Diabetic macular edema
  2. Mild –moderate NPDR
  3. Severe NPDR-low risk PDR
  4. High risk PDR
- Management updates



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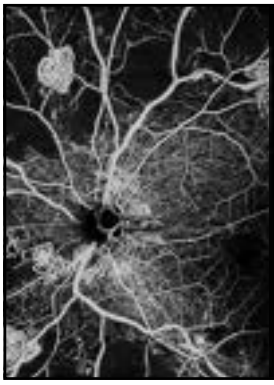

DIABETIC RETINOPATHY

Standard of Care Documents

- American Optometric Association Clinical Practice Guideline (AOA CPG)- last revision Oct 2019
- American Academy of Ophthalmology Preferred Practice Pattern (AAO PPP)- last revision 2024
- DRCR.net- Diabetic Retinopathy Clinical Research Network, a collaborative network dedicated to facilitating multicenter clinical research of DR, >109 participating sites, funded by the NEI of the NIH
  - https://public.jaeb.org/drcrnet

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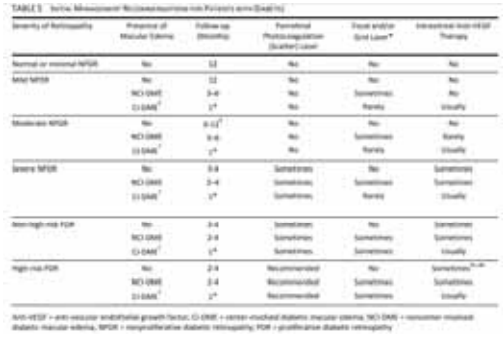

American Academy of Ophthalmology – Preferred Practice Patterns 2024, p25

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	Referral	FU Frequency	PRP	Focal Laser	Anti-VEGF
Mild/Moderate NPDR					
No ME	communicate with PCP	Mild 12 mo , Moderate 6-9 mo	No	No	No
non-clinically significant DME	Retinal consult in 2-4 wks	4-6 mo	No	No	No
CSME or center-involved DME	Retinal consult in 2-4 wks	1-4 mo	No	Based on clinical judgement	Yes, if vision ↓
Severe or Very Severe NPDR					
No ME	Retinal consult in 2-4 wks	3-4 mo	Sometimes	No	Alternative, Sometimes
non-clinically significant DME	Retinal consult in 2-4 wks	2-3 mo	Sometimes	No	Alternative, Sometimes
CSME or center-involved DME	Retinal consult in 2-4 wks	1-4 mo	Sometimes	Based on clinical judgement	Yes, if vision ↓
Low risk PDR					
No ME	Retinal consult in 2-4 wks	3-4 mo	Sometimes	No	Alternative, Sometimes
non-clinically significant DME	Retinal consult in 2-4 wks	2-3 mo	Sometimes	No	Alternative, Sometimes
CSME or center-involved DME	Retinal consult in 2-4 wks	1-4 mo	Sometimes	Based on clinical judgement	Yes, if vision ↓
High risk PDR					
No ME	Retinal consult in 24-48 hrs	2-3 mo	Yes	No	Alternative
non-clinically significant DME	Retinal consult in 24-48 hrs	2-3 mo	Yes	No	Usually
CSME or center-involved DME	Retinal consult in 24-48 hrs	1-4 mo	Yes	Based on clinical judgement	Usually

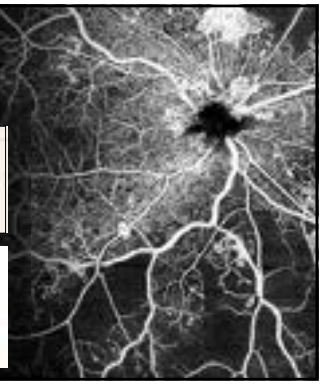
American Optometric Association– Clinical Practice Guideline 2019, p61-63

8

DIABETES

Diabetes is a worldwide epidemic

- 10.5% in the U.S. (34.2 million, CDC 2018)
- Expected to increase to nearly 1 billion by 2050



9

Global Prevalence of Diabetic Retinopathy (DR) in 2020

The global prevalence of DR among adults with DM is ~22.3%

In North America and the Caribbean ~ 1 in 3 adults with DM has DR

8% Vision Threatening DR

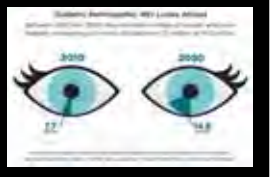
Teo ZL, et al. Global Prevalence of DR and Projection of Burden through 2045: Systematic Review and Meta-analysis. Ophthalmology 2021

10

DIABETIC RETINOPATHY

Increasing demand for diabetic retinopathy care

- Leading cause of new cases of blindness among working aged Americans
- Affects 28.5% of diabetics over age 40 in the US (4.2 million, CDC 2005-2008)
  - # with DR is expected to nearly triple by 2050



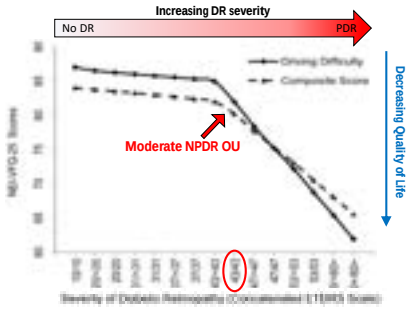
11

Systematic review on barriers for access to DR screening services: Frequent themes harvest plot

Piyasena MMPN, et al. Systematic review on barriers and enablers for access to DR screening services in different income settings. PLoS One. 2019;14(4):e0198979.

12

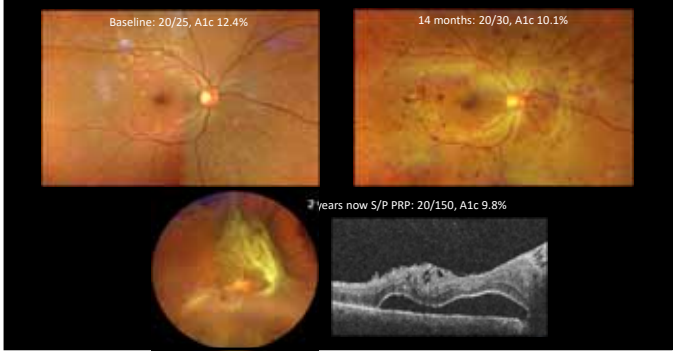
PATIENTS ARE OFTEN ASYMPTOMATIC UNTIL MODERATE NPDR



Los Angeles Latino Eye Study Group. Severity of DR and health-related QOL. Ophthalmology. 2011

13

FAST DR PROGRESSION 32yo: Type 2 DM diagnosed at age 13



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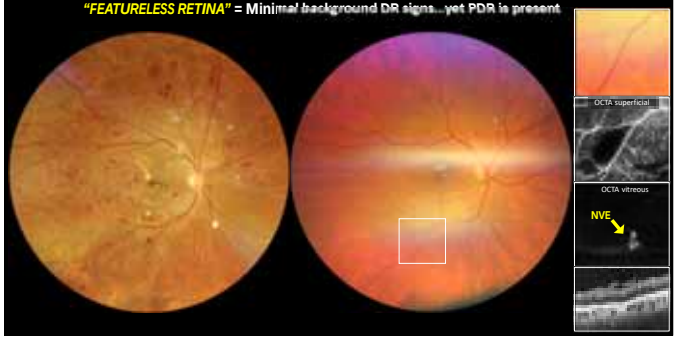
TWO DRASTICALLY DIFFERENT PRESENTATIONS OF PDR!!

"FEATURELESS RETINA" = Minimal background DR signs...yet PDR is present



15

DIABETIC RETINOPATHY RISK FACTORS

- Longer duration of DM!!!!
  - Actual duration in T2DM usually longer than that reported
- Poor glycemic control
- Uncontrolled systemic HTN
- Dyslipidemia
- Insulin use and duration of insulin use
- Pregnancy
- Sleep apnea
- Puberty
- Nephropathy
- Smoking
- Ocular surgery
- Vasculitis
- Vitamin D deficiency

"Once retinopathy is present, duration of DM appears to be a less important factor than glycemic control in forecasting retinopathy progression" (AAO PPP 2019)

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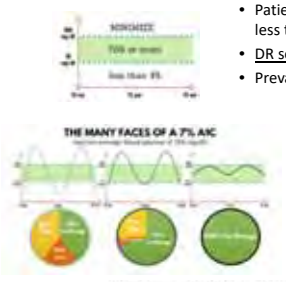
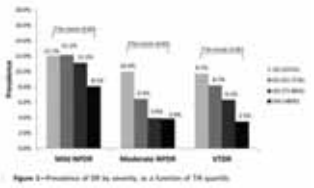
EFFECT OF GLYCEMIC CONTROL ON DR

"Time in range" with continuous glucose monitoring



- Patients with the most advanced DR show significantly less time in range and higher glycemic variability
- DR severity is inversely correlated with time in range
- Prevalence of DR decreases with greater time in range



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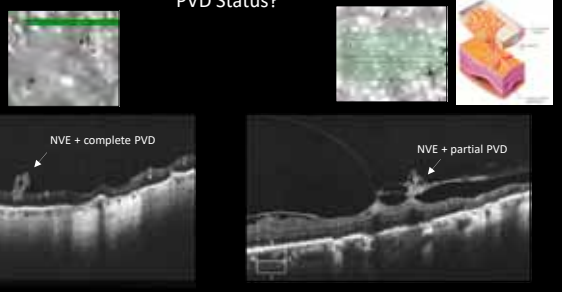
DIABETIC RETINOPATHY PROTECTIVE FACTORS

PVD Status?



COMPLETE PVD IS PROTECTIVE!

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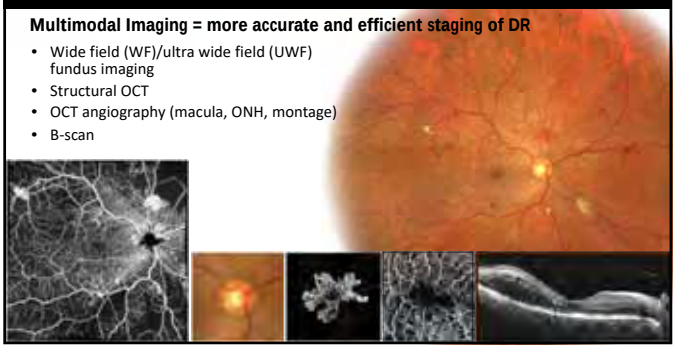
THE POWER OF IMAGING IN DR

Multimodal Imaging = more accurate and efficient staging of DR

- Wide field (WF)/ultra wide field (UWF) fundus imaging
- Structural OCT
- OCT angiography (macula, ONH, montage)
- B-scan



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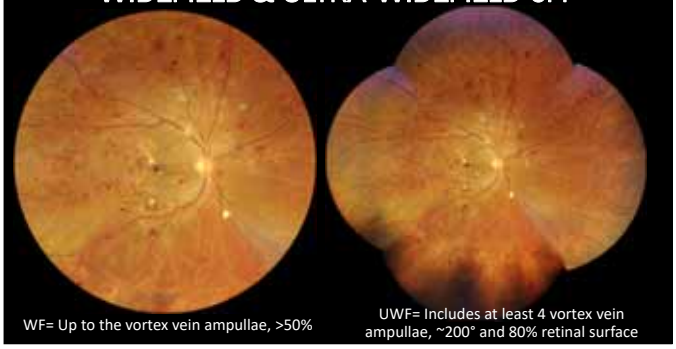
WIDEFIELD & ULTRA-WIDEFIELD CFP



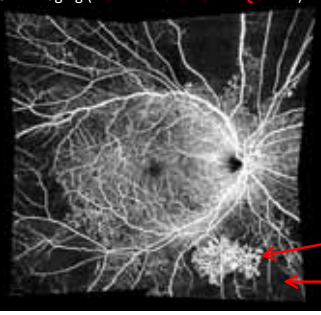
WF= Up to the vortex vein ampullae, >50%

UWF= Includes at least 4 vortex vein ampullae, ~200° and 80% retinal surface

20

OCT ANGIOGRAPHY (OCTA)

- Non-invasive "flow" imaging (NO DYE INJECTION REQUIRED)



Bright → blood flow

Dark → no flow or too slow to detect

21

OCT ANGIOGRAPHY: THE BASICS

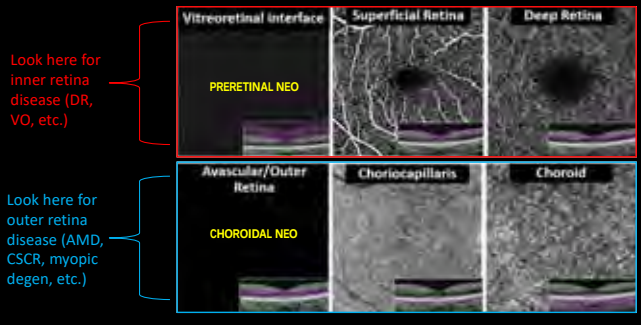
- Absence of late stage hyperfluorescence patterns (aka leakage)
  = Precise delineation/measurement of neo

HIGH RESOLUTION IMAGING OF NEOVASCULAR MEMBRANES = MEASURE SIZE & CLASSIFY MORPHOLOGY PATTERNS

22

OCT ANGIOGRAPHY: THE BASICS

Enface Displays (3mm macula)



Look here for inner retina disease (DR, VO, etc.)

Look here for outer retina disease (AMD, CSCR, myopic degen, etc.)

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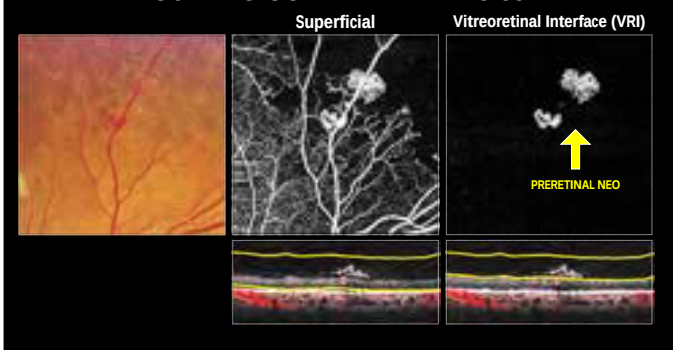
OCT ANGIOGRAPHY: THE BASICS



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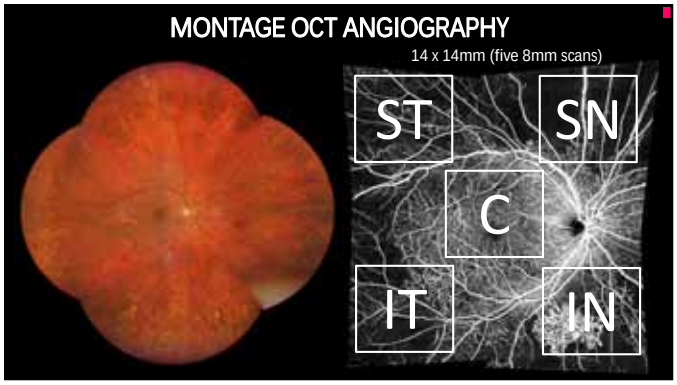

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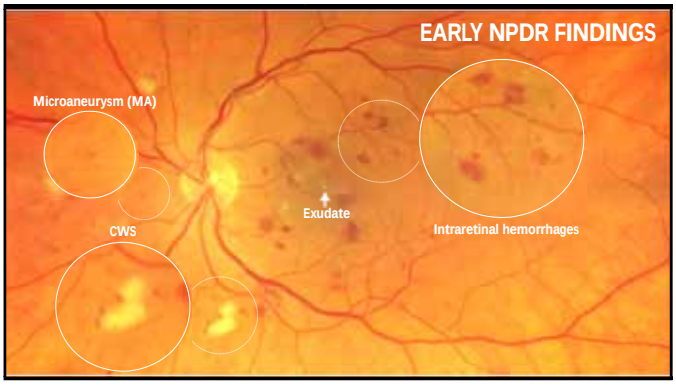

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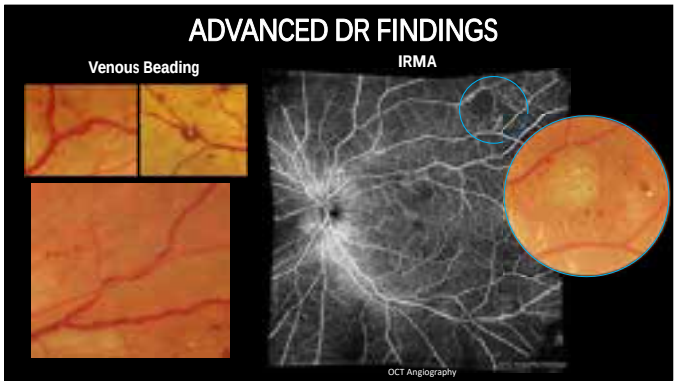

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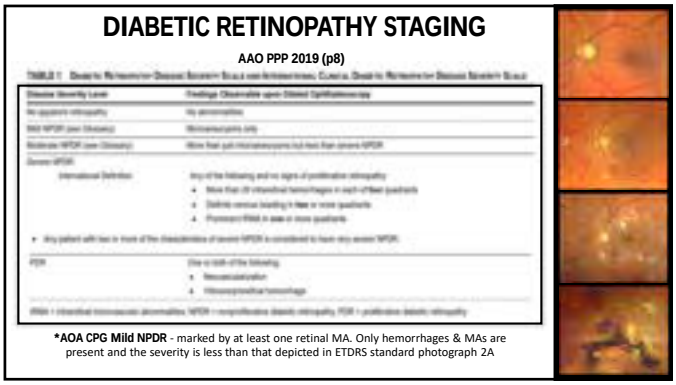

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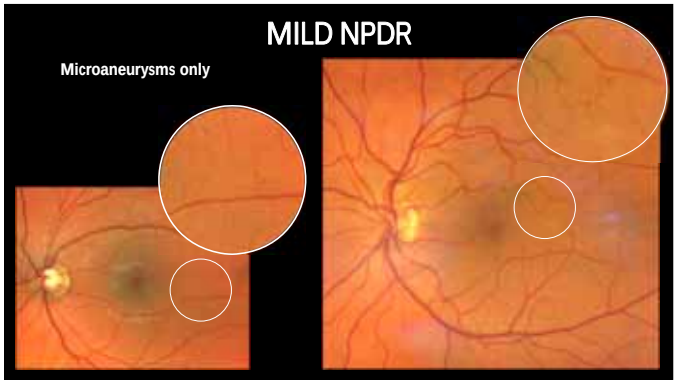

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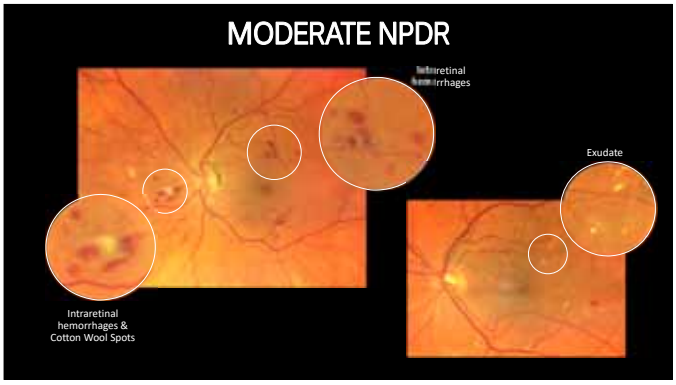

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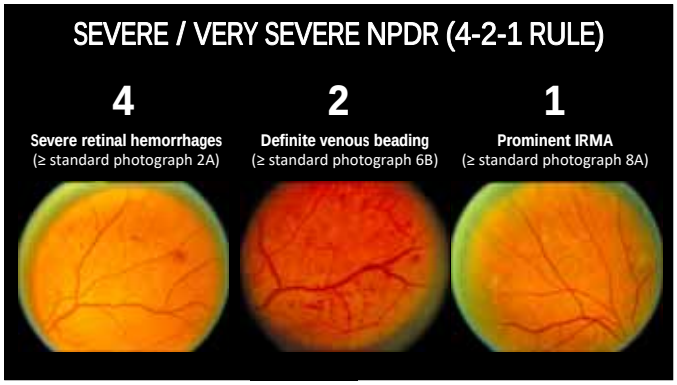

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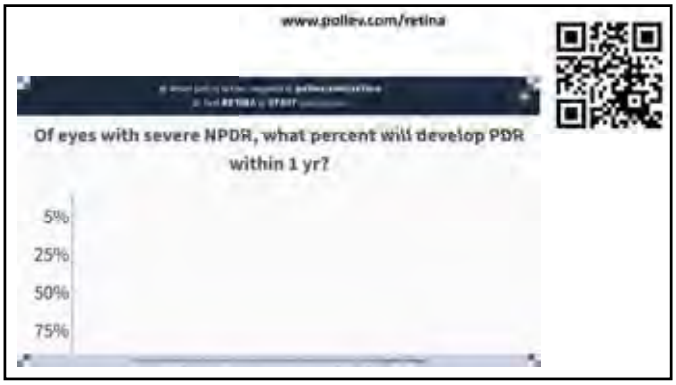

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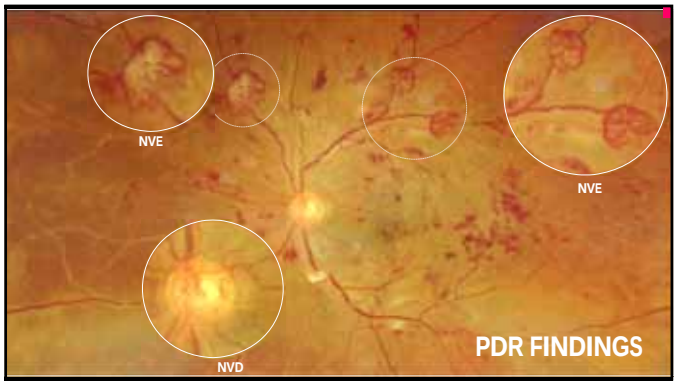

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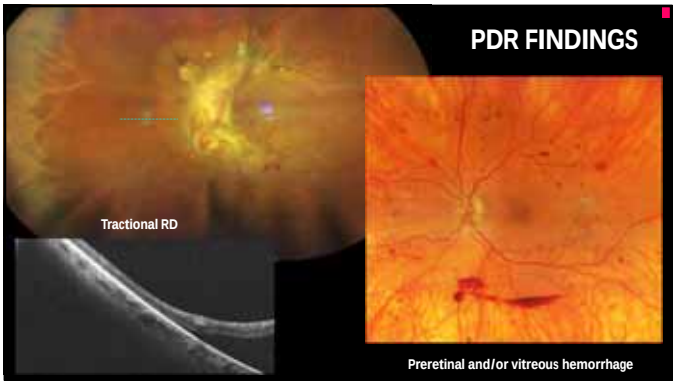

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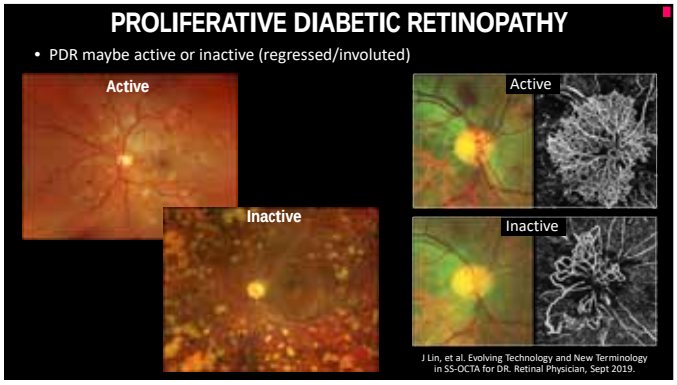

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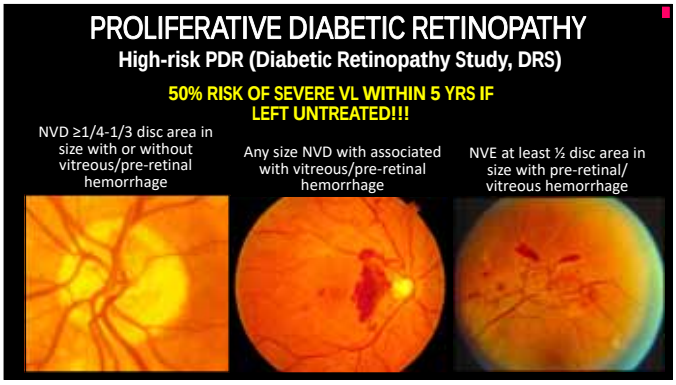

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DME STAGING

Macular edema: Retinal thickening within 2 DD of the center of the fovea

- Center involved (CI-DME) vs non-center involved (NCI-DME)

  CI-DME= thickening within the central subfield zone that is **1mm in diameter**

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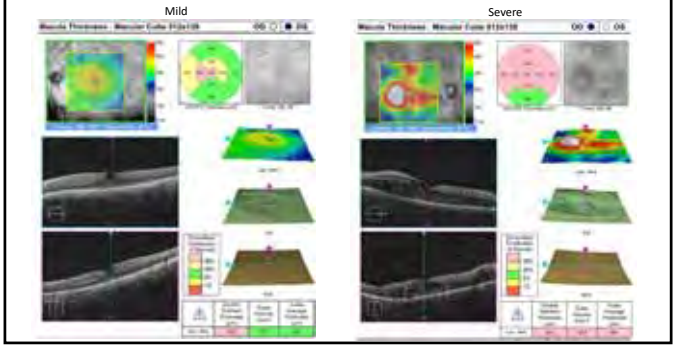
Center-involved DME (CI-DME)

Mild

Severe



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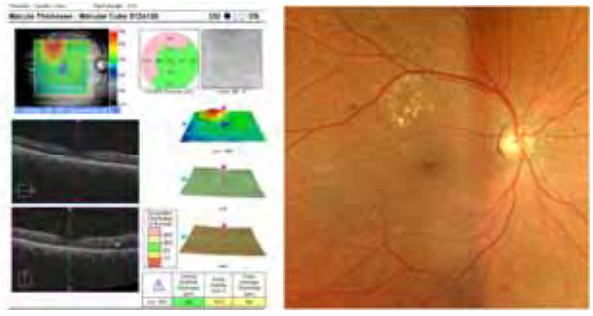
Non-center involved DME (NCI-DME)



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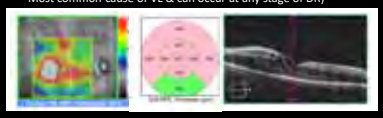
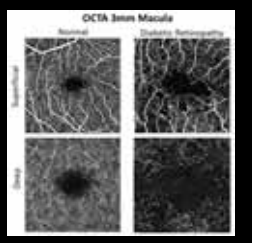
COMMON CAUSES OF VISION LOSS IN DR

Center-Involved DME (CI-DME)

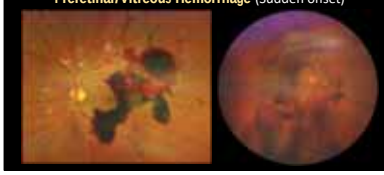
Most common cause of VL & can occur at any stage of DR)



Macular Ischemia



Preretinal/Vitreous Hemorrhage (Sudden onset)



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UTILITY OF OCT/OCTA IN DME

- Aids in the classification of DME as center involved (CI-DME) vs non-center involved (NCI-DME)
- Identification of subclinical DME
- OCTA may aid in identifying sources of DME such as MAs or IRMA
- OCTA allows for detection of macular ischemia
  - Significant macular ischemia = guarded prognosis following treatment of DME
- Monitor response to treatment /determine when retreatment is necessary (change analysis)

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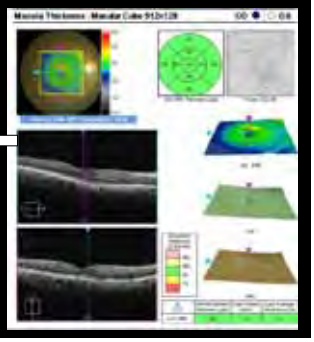
UTILITY OF OCT/OCTA IN DME

Identification of Subclinical DME



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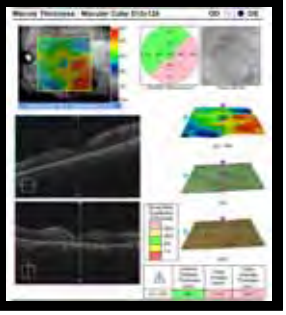
THE CASE OF THE FORLORN FOVEA

OCTA- Identify Macular Ischemia

61yo Hispanic Male

- DM type 2 x 27 years
- OS VA 20/100



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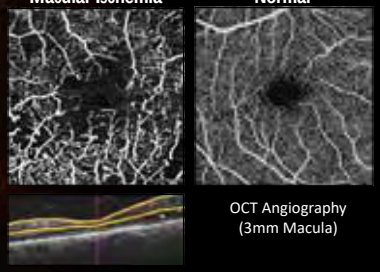
THE CASE OF THE FORLORN FOVEA

OCTA- Identify Macular Ischemia

Macular Ischemia | Normal



OCT Angiography
(3mm Macula)

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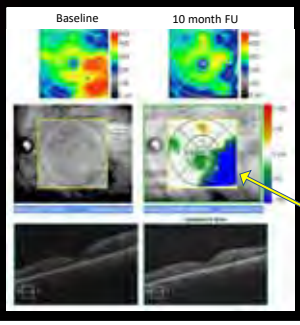
THE CASE OF THE FORLORN FOVEA

OCTA Identification of Macular Ischemia

Change after 10 months, observation only

20/100 to 20/60



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MANAGEMENT OF DME

- **Who should be treated (anti-VEGF 1st line therapy)?**
  - **CI-DME with VA 20/32 or worse- referral within 2-4 weeks (AOA-CPG 2019)**
- Who can usually be observed?
  - NCI-DME
  - CI-DME with VA 20/25 or better - defer tx until VA is 20/30 or worse (DRCR.net Protocol V)
    - Re-examine every 2-4 months
  - Consider early treatment if:
    - DR stage is severe NPDR or worse
    - Planning PRP or cataract extraction
    - Systemic risk factors for progression exist (HTN, renal failure, pregnancy)
    - Pt is unobservant/uncompliant

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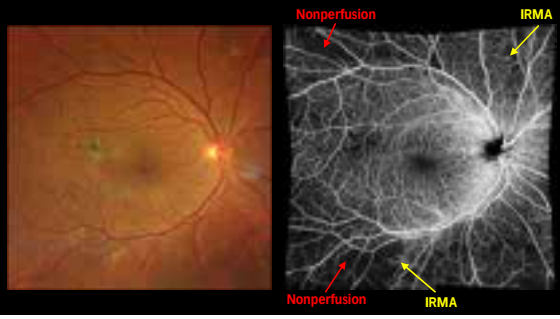
Utility of OCT/OCTA in Mild-Moderate NPDR

- OCTA highlights subtle vascular abnormalities = more accurate DR staging



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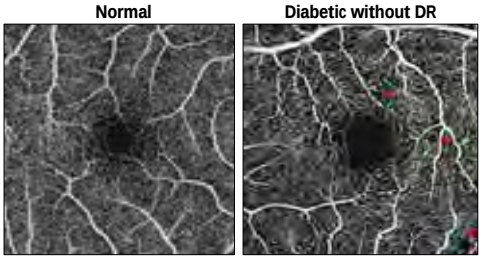
OCTA DETECTION OF SUBCLINICAL DR

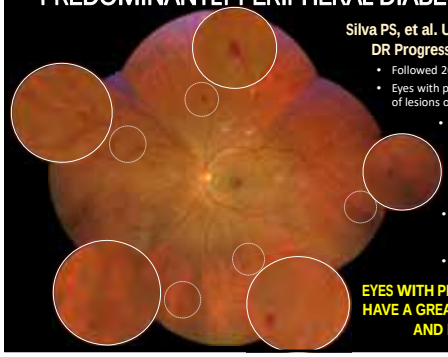
NO CINICALLY DETECTABLE DR!!!

Normal | Diabetic without DR



48

PREDOMINANTLY PERIPHERAL DIABETIC RETINOPATHY



Silva PS, et al. UWF Peripheral Lesions Predict DR Progression. Ophthalmology 2015.

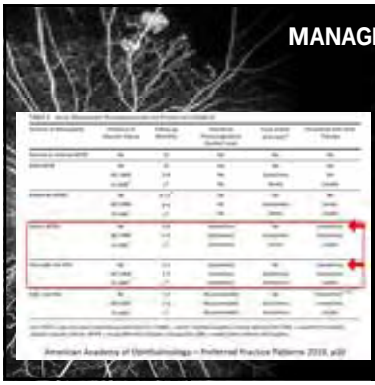
- Followed 200 DR eyes for ~ 4 yrs
- Eyes with predominately peripheral DR = majority of lesions outside the 75° ETDRS standard 7 fields
  - Compared to eyes without, eyes with predominately peripheral DR had ↑ risk of DR progression and a 4.7-fold ↑ risk for progression to PDR (6% vs. 25%).

DRCR.net Protocol AA

- ↑ risk of DR progression with UWF FA predominately peripheral lesions but not with CFP
- Greater risk with worsening FA NP index

EYES WITH PREDOMINANTLY PERIPHERAL DR HAVE A GREATER RISK FOR DR PROGRESSION AND DEVELOPMENT OF PDR!!

49



MANAGEMENT OF SEVERE NPDR-LOW RISK PDR

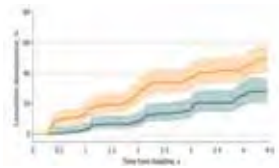
- Refer all regardless of DME status
- Start considering anti-VEGF therapy/PRP at the severe NPDR stage even without CI-DME (optional)
  - Anti-VEGF: reverse DR stage/prevent development of vision threatening complications
  - Both ranibizumab and aflibercept FDA approved even if no DME

50

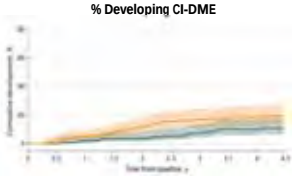
DRCR.net Protocol W- Effect of Intravitreous anti-VEGF vs Sham for Prevention of Vision-Threatening Complications of DR, 4 Year Results

- Randomized eyes with moderate to severe NPDR without CI-DME to sham (tx deferred until CI-DME or high risk PDR developed) vs periodic intravitreal aflibercept
- Lower rates of developing CI-DME with vision loss (11% vs 19%) or PDR (28% vs 49%) in treated eyes vs sham at 2 years
- Change in VA at 4 years: -2.7 letters vs -2.4 letters (not significant)

% Developing PDR

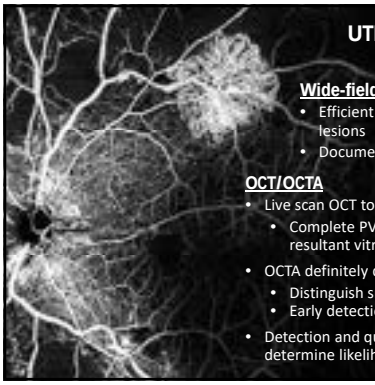


% Developing CI-DME



Maturi RK, et al. 4-Year Visual Outcomes in the Protocol W Randomized Trial of Intravitreous Aflibercept for Prevention of Vision-Threatening Complications of DR. JAMA Ophthalmology 2023.

51



UTILITY OF IMAGING IN SEVERE NPDR-LOW RISK PDR

Wide-field Fundus Imaging

- Efficient identification/documentation of DR lesions
- Document predominately peripheral DR

OCT/OCTA

- Live scan OCT to look for neo and determine PVD status
  - Complete PVD = lower risk for neo growth and resultant vitreoretinal traction
- OCTA definitely differentiates severe NPDR from early PDR
  - Distinguish small NVE from IRMA
  - Early detection of NVD
- Detection and quantification of nonperfusion to determine likelihood of neo/risk for progression

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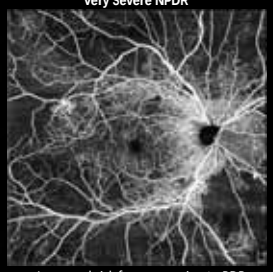
MANAGEMENT OF SEVERE NPDR-LOW RISK PDR

Normal

Very Severe NPDR



- Increased risk for progression to PDR
- Consider early PRP/anti-VEGF treatment

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Utility of OCTA Montage Imaging in DR

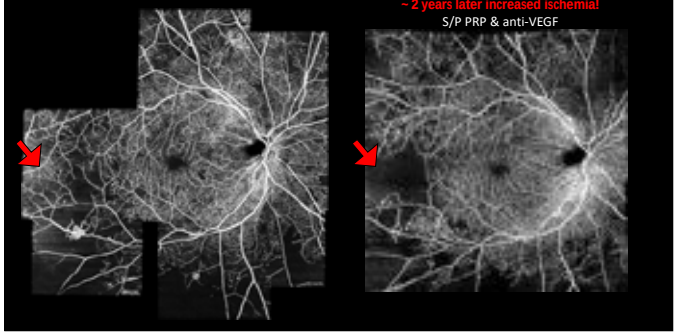
OCTA – Visualization of peripheral NP (nearly invisible without)

54

Ischemic disease progressing despite treatment!

~ 2 years later increased ischemia!

S/P PRP & anti-VEGF



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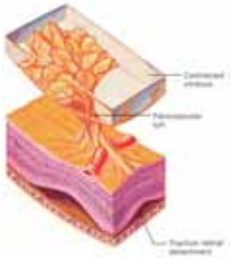
www.pollev.com/retina

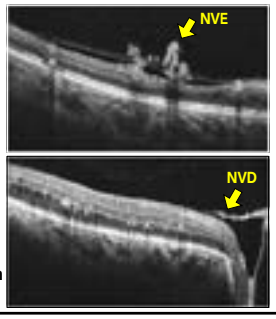
Pre-retinal neovascularization is best defined as:

56

PROLIFERATIVE DIABETIC RETINOPATHY

Preretinal Neovascularization





Most often characterized by **new blood vessel growth located between the ILM and the posterior hyaloid**

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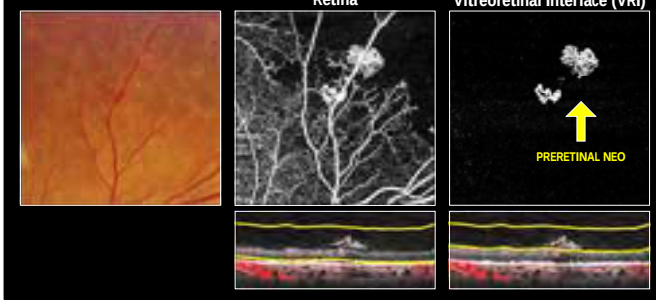
UTILITY OF OCT/OCTA IN SEVERE NPDR-LOW RISK PDR

IRMA or early NVE???



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Utility of OCTA Montage Imaging in DR

Neo often forms at the border of perfusion and nonperfusion

Isolate Preretinal Neo!

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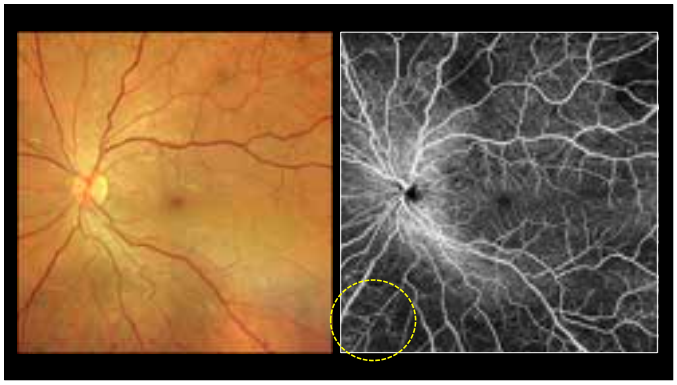
PROLIFERATIVE OR NONPROLIFERATIVE (NVE OR IRMA)?

43yo Native American male

- CC: Stable vision OU.
- LEE: 1 yr ago diagnosed with moderately-severe NPDR
- Type 2 DM x 18 years (HbA1C 8.5%)
- VA (cc @ dist)
  - OS: 20/20
- BP: 142/85

60



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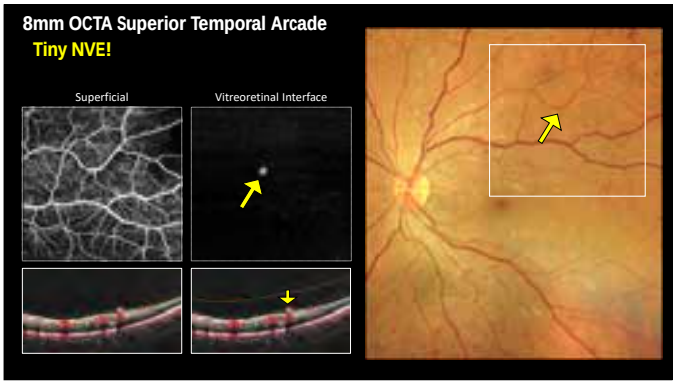

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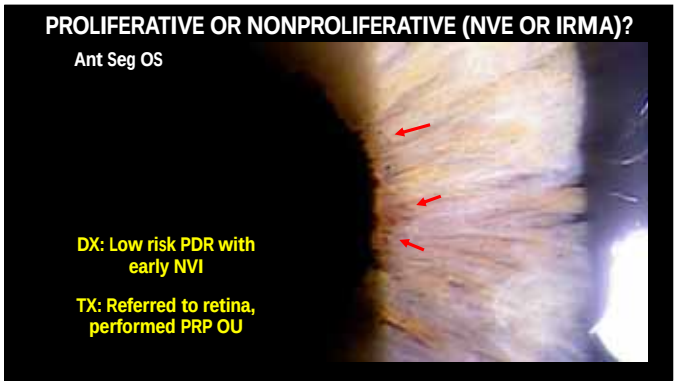

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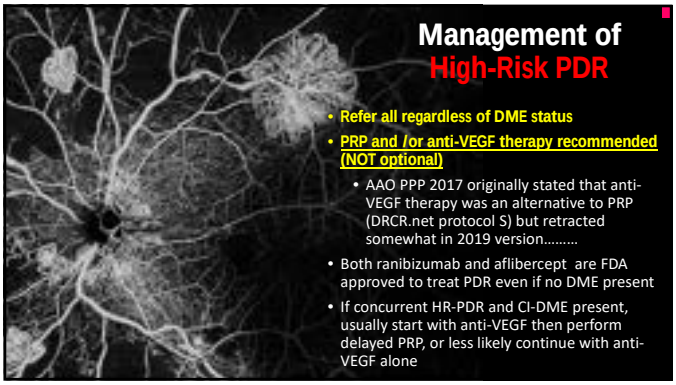

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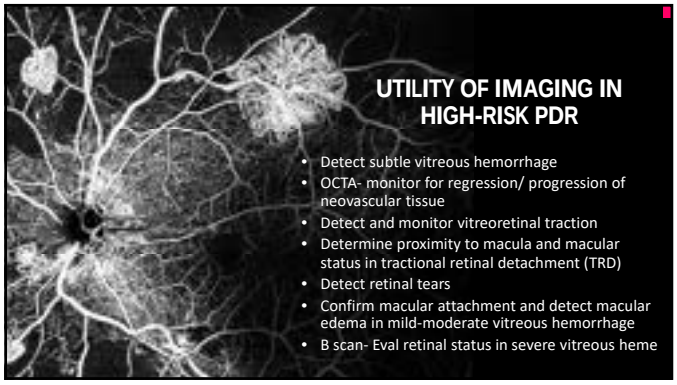

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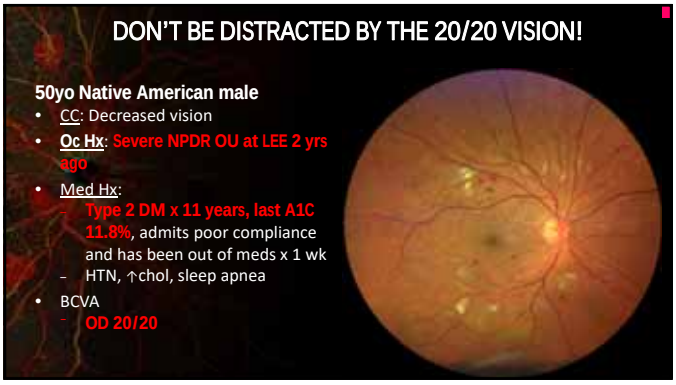
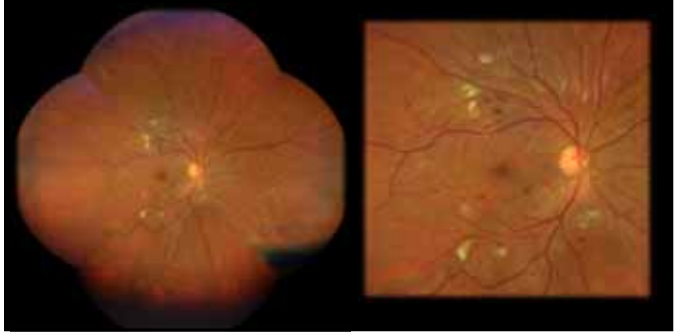


66

DON'T BE DISTRACTED BY THE 20/20 VISION!



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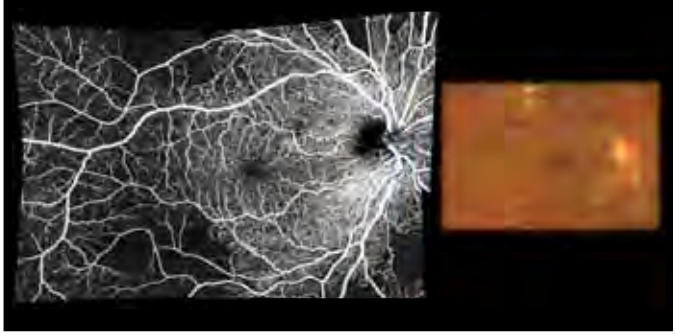
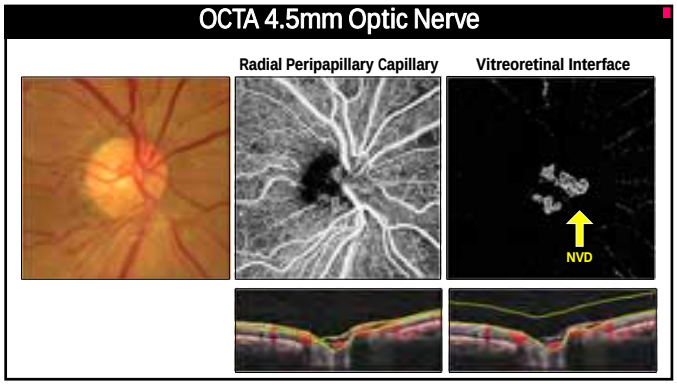
DON'T BE DISTRACTED BY THE 20/20 VISION!



68

OCTA 4.5mm Optic Nerve



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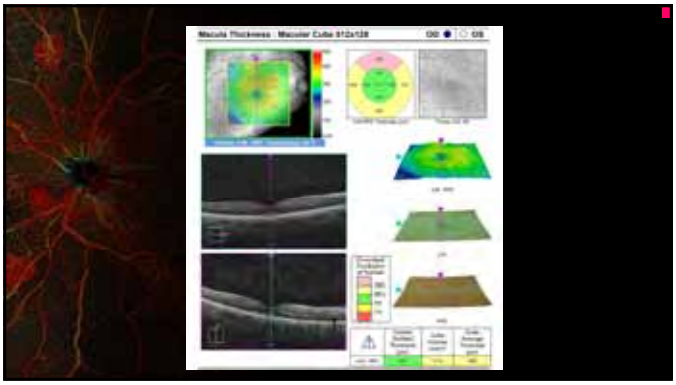

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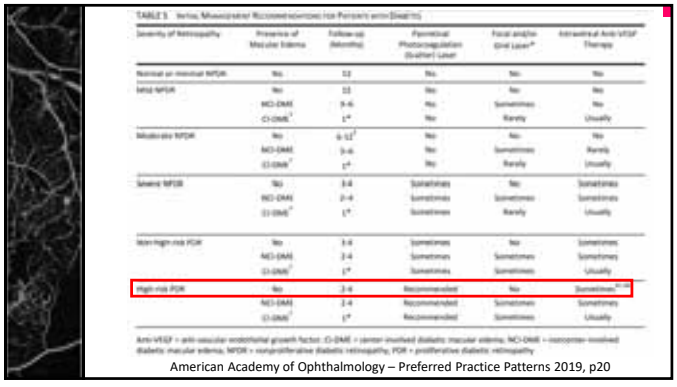

American Academy of Ophthalmology – Preferred Practice Patterns 2019, p20

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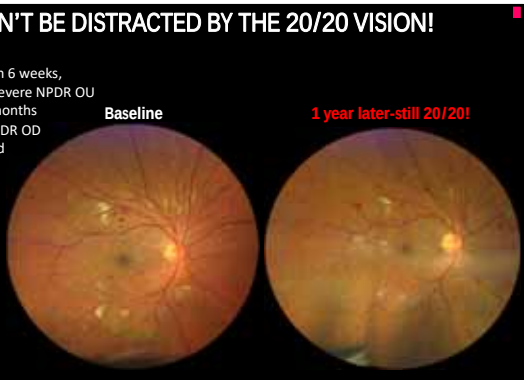
DON'T BE DISTRACTED BY THE 20/20 VISION!

Follow-up

- Sees retina within 6 weeks, diagnosed with severe NPDR OU → observe in 6 months
- 6 months later- PDR OD → PRP performed



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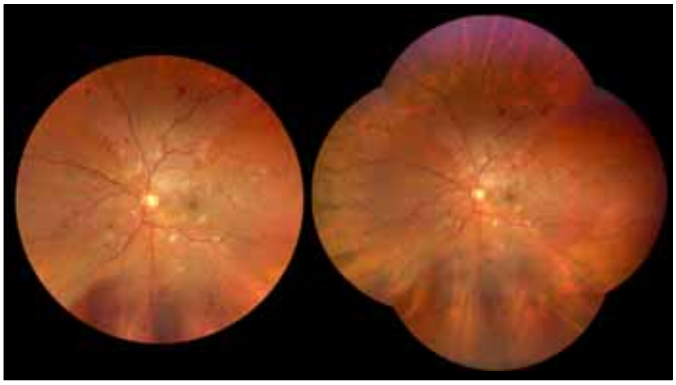
TAKING IT TO THE EXTREME

29yo Native American male – Presents for routine DM exam, needs gls

- POH: Severe NPDR OU at LEE 5 yrs ago
- MH:
  - DM Type 2 x 20 yrs, last HbA1C 8.2%
  - 2 toes amputated recently due to DM ulcer
- Vision: BCVAs @dist
  - OS 20/30^{+2}
- Entrance testing: Normal
- External exam: Normal OU

73



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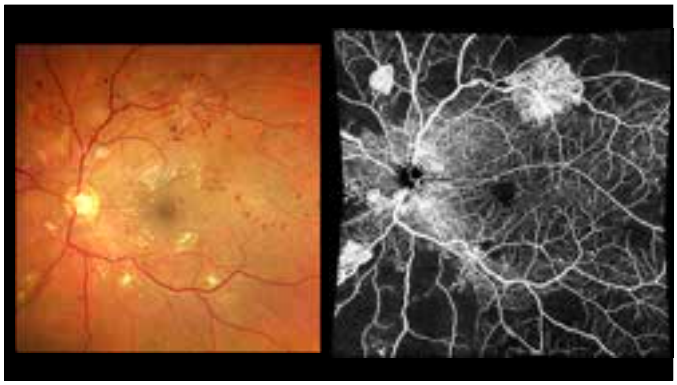
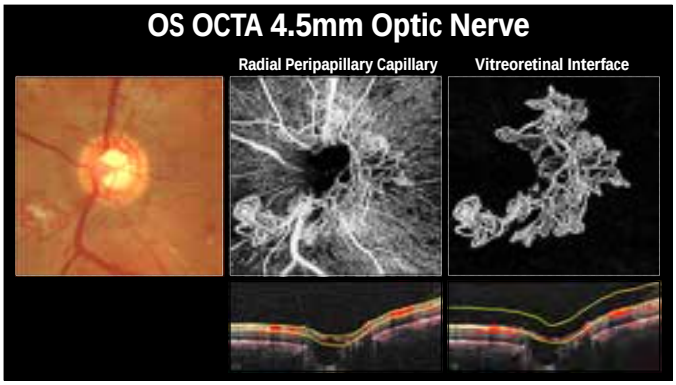


75

OS OCTA 4.5mm Optic Nerve

Radial Peripapillary Capillary | Vitreoretinal Interface



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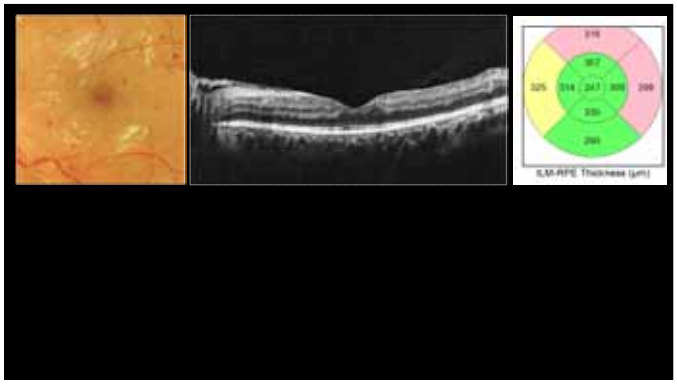

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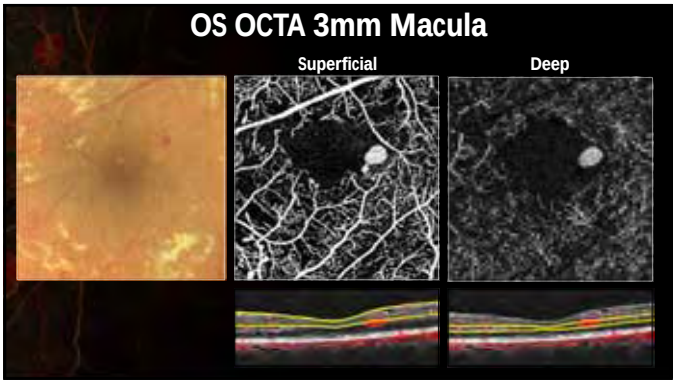
OS OCTA 3mm Macula

Superficial | Deep



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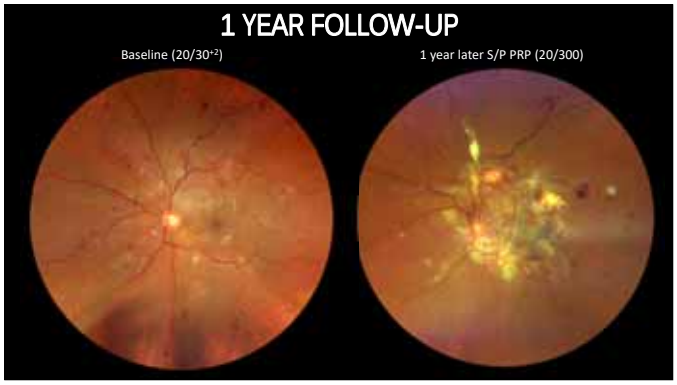

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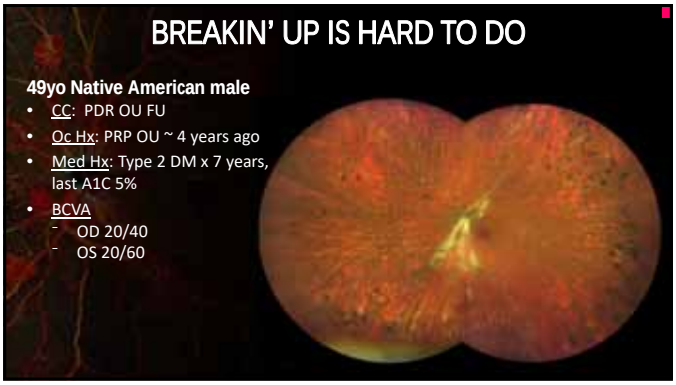

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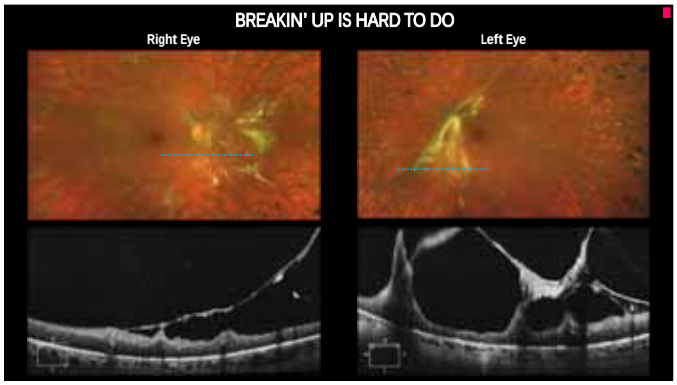

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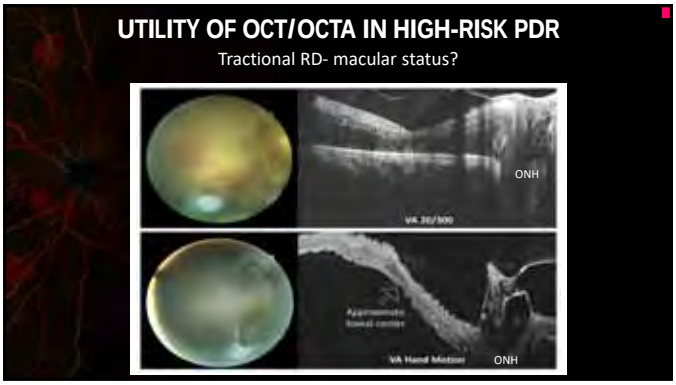

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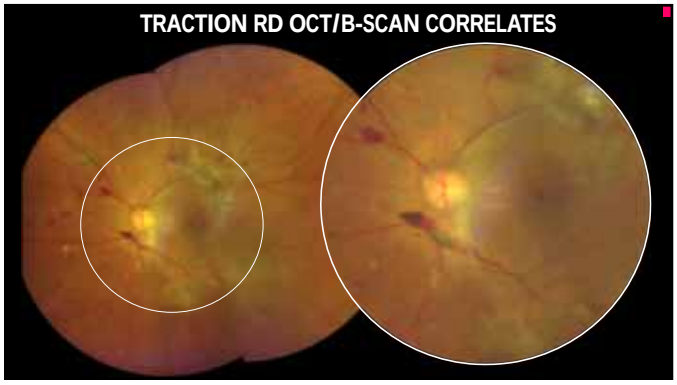

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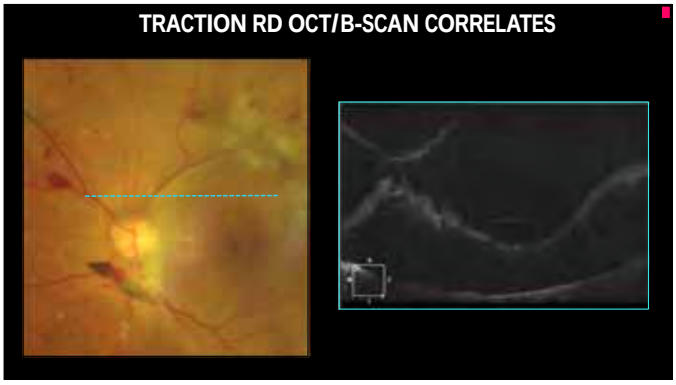

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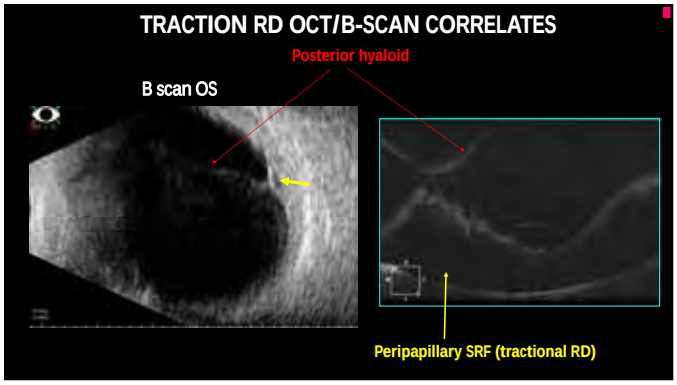
TRACTION RD OCT/B-SCAN CORRELATES



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AOA-CPG REFERRAL RECOMMENDATIONS

When to refer to a retinal specialist:

High Risk PDR	• Within 24-48 hrs
PDR	• Within 2-4 weeks
Severe NPDR (with or without macular edema)	• Within 2-4 weeks
DME	• Within 2-4 weeks

American Optometric Association– Clinical Practice Guideline 2019, p61-63

Also consider referral when:
- You are unsure of retinopathy stage
- NVI/NVA (urgent)
- TRD

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Anti-VEGF Biosimilars

Per the FDA:
- "A biosimilar is a biological product that is approved based on data showing that it is highly similar to a biological product already approved by the FDA (reference product) and has no clinically meaningful differences in terms of safety, purity and potency (i.e., safety and effectiveness) from the reference product, in addition to meeting other criteria specified by law."

Currently, 2 FDA approved Ranibizumab Biosimilars
- Byooviz (Samsung) approved Sept 2021
- Cimerli (Coherus) approved Oct 2022

www.reviewofophthalmology.com/article/an-update-on-the-antivegf-biosimilar-pipeline

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Extended Duration Anti-VEGF Therapies

High Dose Aflibercept (8mg Eylea)
- FDA approved in Aug 2023 for nAMD, DME, & DR
- 8mg high dose vs 2mg standard dose
- Phase III PULSAR (nAMD) & **PHOTON (DME) clinical trials**
  - Demonstrated non-inferior and clinically equivalent vision gains at 48 wks with 8 mg at 12 and 16 week dosing after 3 initial doses compared to 2mg Eylea every 8 weeks after initial dosing
  - Recommended dose 1 injection every 4 weeks for first 3 mos for all indications, then every 8-16 weeks (2-4 mos) for AMD and DME and every 8-12 weeks (2-3 mos) for DR
  - No new safety signals

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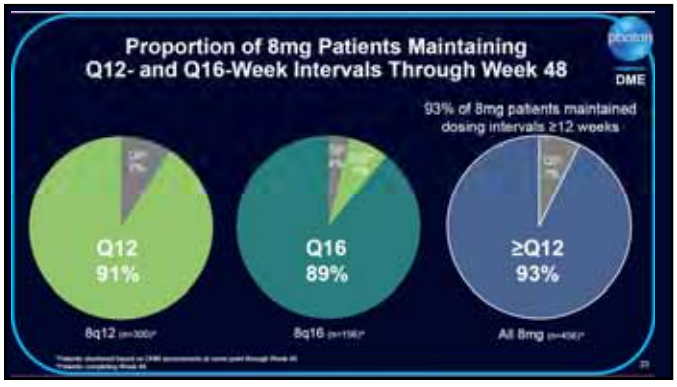

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Extended Duration Anti-VEGF Therapies

Faricimab (Vabysmo)
- FDA approved in Jan 2022 for nAMD & DME, Oct 2023 for RVO
- Dual MOA (bi-phasic antibody) inhibits VEGF-A **& Angiopoietin-2 (Ang-2)**

- Phase III DME clinical trials **YOSEMITE & RHINE**
  - Dosing monthly x4 months than flexible dosing based on pt need
  - **60% eligible for extended dosing could be treated every 4 months at 2 yrs**

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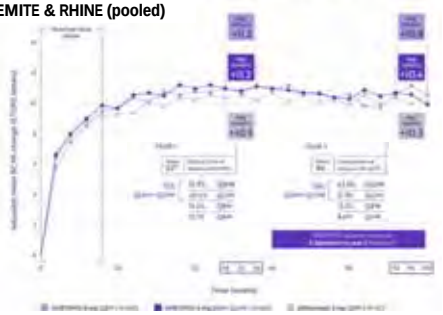
YOSEMITE & RHINE (pooled)



https://www.vabysmo-hcp.com/dme-data/efficacy-in-dme.html

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Faricimab Phase 3 DME

Durability in PTI Arm

Wells J. Angiogenesis Meeting February 2022

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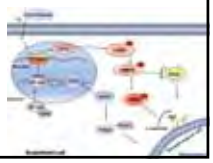
FENOFIBRATE FOR DIABETIC RETINOPATHY

- Safe and inexpensive PO fibric acid derivative conventionally used to treat dyslipidemia, off-label for DR
  - Licensed in Australia and Singapore for the treatment of DR, generic in the US
- Experimentally has been shown to decrease vascular leakage, downregulate VEGF, & reduce endothelial cell and pericyte loss
- Dose: 160mg per day (54mg qd if mild-moderate renal disease)
- Contraindications: Severe renal disease, liver disease, possibly potentiates warfarin anticoagulation



Stewart S, et al. Fenofibrate for DR. Asia Pac J Ophthalmol (Phila). 2018 Nov-Dec;7(6):422-426.

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PERSPECTIVE

Fenofibrate – A Potential Systemic Treatment for Diabetic Retinopathy?

TIEN YIN WONG, RAFAEL SIMÓ, AND PAUL MITCHELL

"There are now robust and consistent clinical data to recommend fenofibrate as an adjunctive treatment for early DR in patients with type 2 DM, taking into account the risks vs benefits of therapy."

- Two large RCTs have demonstrated that fenofibrate in pts with Type 2 DM decreased the rate of progression in eyes with preexisting DR:
  1. **FIELD (Fenofibrate Intervention and Event Lowering in DM) 2005**
     - In eyes with preexisting DR, 14.6% on placebo had 2 step worsening vs 3.1% on 200mg/day fenofibrate after ≥2 years FU.
     - Fenofibrate also decreased need for laser treatment for PDR or DME.
  2. **ACCORD (Action to Control Cardiovascular Risk in DM) 2007**
- Does not reduce the risk of new DR development in eyes with no DR at baseline

SUBSTANTIAL EVIDENCE EXISTS SHOWING THAT FENOFIBRATE DECREASES DR PROGRESSION IN TYPE 2 DM!!!

Stewart S, et al. Fenofibrate for DR. Asia Pac J Ophthalmol (Phila). 2018 Nov-Dec;7(6):422-426.

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NUTRITIONAL SUPPLEMENTATION FOR DIABETIC RETINOPATHY

Pts with DR have high incidences of vitamin and mineral deficiencies

Supplementation with vitamins, minerals, and nutraceuticals may complement current tx approaches

Goals of supplementation:

- Reduce oxidative stress
- ↓ ischemic injury
- Combat elevated homocysteine
- Support retinal metabolism/function
- Promote microvascular health

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NUTRITIONAL SUPPLEMENTATION FOR DIABETIC RETINOPATHY

THE KEY PLAYERS!!

- L-methylfolate
- Natural vitamin E complex
- Vitamin D
- Vitamin C
- N-acetylcysteine
- Vitamins B1, B2, B6 & B12 (methylcobalamin)
- Lutein & zeaxanthin
- Alpha-lipoic acid

Shi C, Wang P, Airen S, et al. Nutritional and medical food therapies for diabetic retinopathy. Eye Vis (Lond). 2020;7:33.

96

NUTRITIONAL SUPPLEMENTATION FOR DIABETIC RETINOPATHY

EyePromise DVS

EyePromise DVS is formulated for:

- Patients at risk of macular edema
- Patients at risk of retinal blood vessel degeneration
- Improved visual performance

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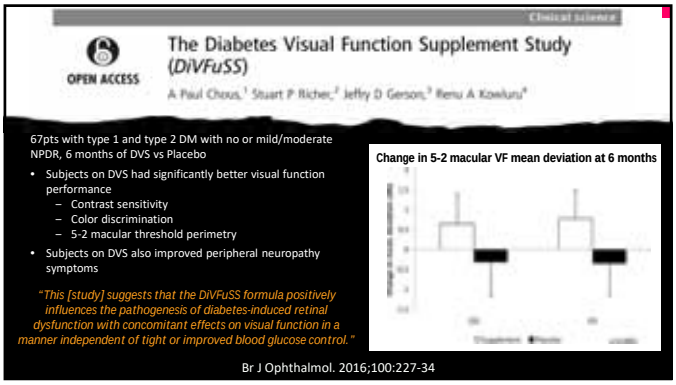

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AUTONOMOUS ARTIFICIAL INTELLIGENCE SYSTEMS FOR DR SCREENING

- AI software program algorithms used to analyze fundus photographs
  - Images are uploaded to cloud-based server for analysis
- Requires two 45° photos per eye, usually does not require dilation unless photos are poor quality
- Target users: PCP and endocrinologist offices esp in areas with poor access to eyecare
- Goal: Increase rates of DR screening/ identify patients at risk of vision loss (moderate NPDR or worse, DME) to expedite and preference referrals for eye exams
- Two systems already FDA-approved

1) IDx-DR (pair with Topcon NW400 retinal camera) - FDA approved Aug 2018
   - Identified more than mild DR with a sensitivity of 88.2% & specificity of 89.0%
2) EyeArt (pair with Canon CR-2 AF) - FDA approved Aug 2020
   - Identified more than mild DR with a sensitivity of 96% & specificity of 88.0%

Gerendas B, et al. FDA-authorized autonomous AI for DR screening in clinical routine. IOVS July 2019, Vol.60, 4776.
Bhaskaranand M, et al. The value of automated DR screening with the EyeArt system: A study of more than 100,000 consecutive encounters from people with DM. Diabetes Technol Ther 2019;21:11:635-43.

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AUTONOMOUS ARTIFICIAL INTELLIGENCE SYSTEMS FOR DR SCREENING

Optomed Aurora AEYE

- **Handheld** AI fundus camera FDA approved April 30, 2024
- Uses a single image from each eye, rarely requiring dilation

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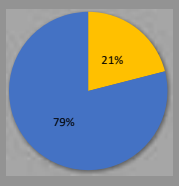
DIABETIC RETINOPATHY

Newest study shows the DR Score was the strongest predictor of progression to VTC



Patients with a DR Score of 26.9 or higher had a 79% chance of progressing to needing treatment in less than 1 year.

- Longitudinal prospective study published in *Ophthalmology Science*, the journal of the American Academy of Ophthalmology
- 48 weeks (~11 months)
- 74 patients with moderate to severe NPDR tested with ERG
- Evaluated 56 parameters at multiple US sites from 4 testing modalities:
  - RET*eval* DR Assessment (ERG + pupillometry)
  - Color fundus photography (FP)
  - OCT angiography (OCT-A)
  - Ultra-widefield fluorescein angiography (UWF-FA)

Davis, C. Quentin et al. Predicting Progression to Vision-Threatening Complications in Diabetic Retinopathy. *Ophthalmology Science*, online June 17, 2025, 100859

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DIABETIC RETINOPATHY

Study shows the DR Score was the strongest predictor of progression to VTC

RETeval DR Score was the strongest predictor of progression to vision-threatening complications!

C. Quentin Davis, PhD, Nadia K. Waheed, MD, Mitchell Brigell, PhD. Predicting Progression to Vision-Threatening Complications in Diabetic Retinopathy. Ophthalmology Science, online June 17, 2025, 100859

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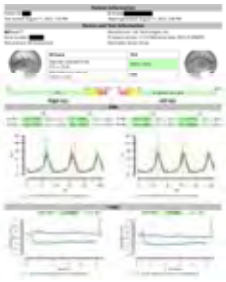
DIABETIC RETINOPATHY

Sample report



- Must NOT be dilated
- DR score factors in implicit time, amplitude, pupil response, and age

DR Score	6-month Progression Risk	1-year Progression Risk
≤ 19.9	0%	0%
20.0 – 23.4	9%	48%
23.5 – 26.8	35%	60%
≥ 26.9	49%	79%

**Every 1-point increase in the DR Score increases the patient's likelihood of intervention by 28%*

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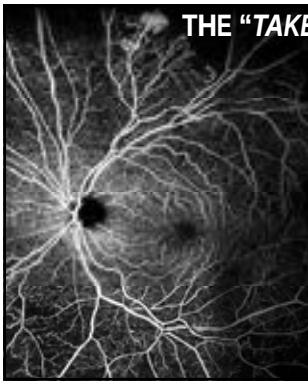

THE "*TAKE HOME*" MESSAGE

OCT Clinical Applications in DR

- Detect, classify, and monitor DME
- Determine PVD status
- Detect preretinal tissue suggestive of neo
- Detect and monitor vitreoretinal traction/ TRD

OCTA Clinical Applications in DR

- Detection of sub-clinical DR
- Highlight vascular abnormalities = more accurate staging
- Detection and quantification of non-perfusion
  - Peripheral and macular
- Early detection of PDR
- Monitor PDR regression with treatment

Wide-field Clinical Applications in DR

- Detection/documentation of predominately peripheral DR
  - ↑ risk for DR progression and proliferation
- More accurate and efficient staging of DR

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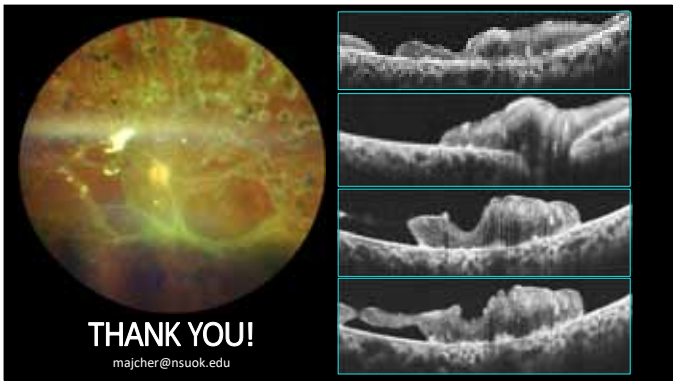

THANK YOU!

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