



# DIABETES AND THE EYE

Protecting Vision for a Healthier Future

Jed Assam, MD  
Retina Surgeon  
VRA Vision



# OVERVIEW

- Diabetes in the Eye – Diabetic Retinopathy
- Risk Factors for Progression
- Recommendations for Eye Health and Screening
- Modern Management of Diabetic Retinopathy
- Resources for Learning More

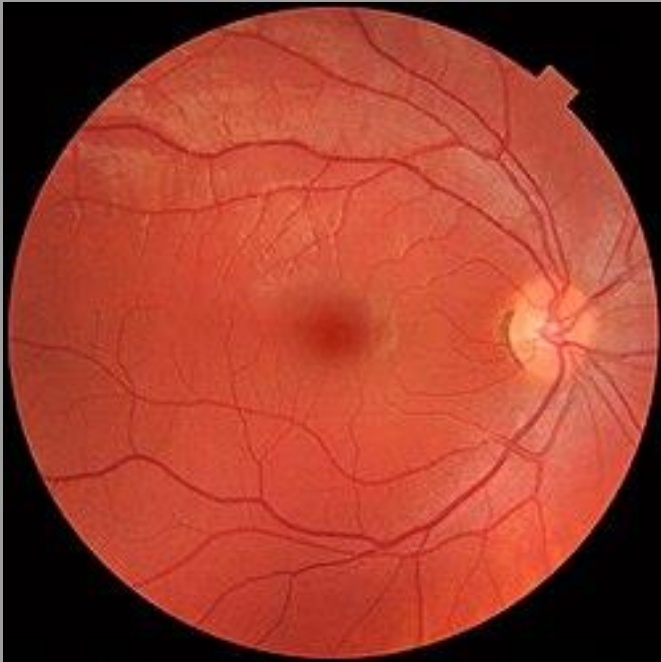


# DIABETES IN THE EYE – WHAT IT IS AND HOW IT AFFECTS VISION

- High blood sugars cause blood vessel breakdown
  - AGE (advanced glycosylation end) product build up.
- AGE products damage the blood vessel wall which causes:
  - Vessel obstruction – induces loss of blood flow to the eye
  - Blood release, fluid build up, and inflammation in the retina
- Two main forms of diabetic retinopathy
  - Non-proliferative
  - Proliferative

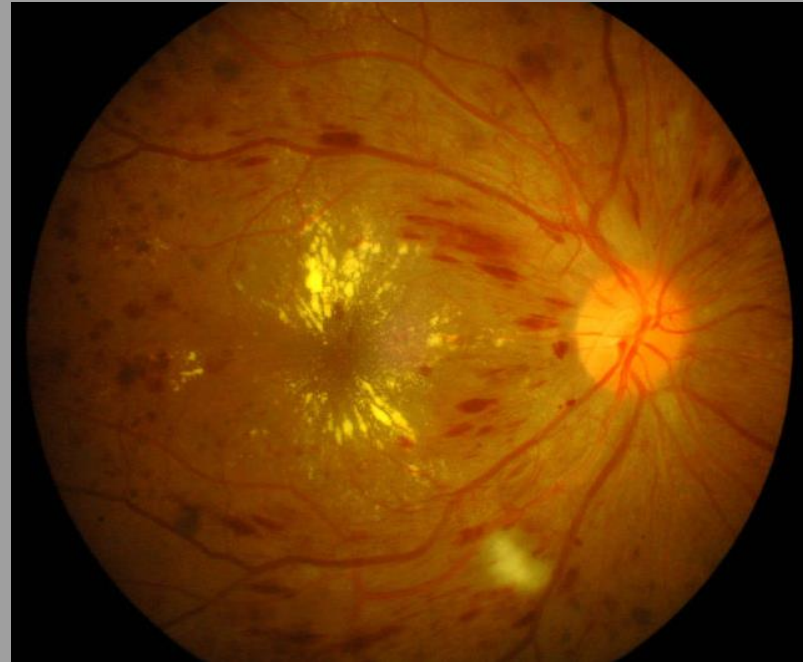
# VISUALIZING DIABETES IN THE EYE

Normal



[https://en.wikipedia.org/wiki/Fundus\\_%28eye%29](https://en.wikipedia.org/wiki/Fundus_%28eye%29)

Non-proliferative



<https://www.herefordeyesurgery.com/medical-retina/diabetic-retinopathy/>

Proliferative



<https://pinterest.com/pin/559431584983134405/>



# RISK FACTORS FOR PROGRESSION<sup>1</sup>

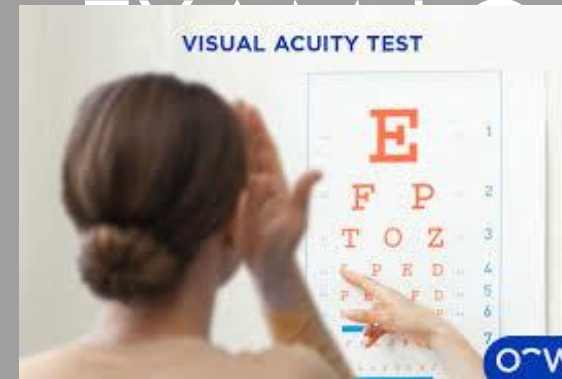
- Time with Condition
  - Type I
    - 5 years – 20% retinopathy rate
    - 10 years – 60% retinopathy rate
    - 15 years – 80 % retinopathy rate
  - Type II
    - < 5 years – 40% (insulin +) | 24% (insulin -)
    - 19 years – 84% (insulin +) | 53 % (insulin -)
- Hemoglobin A1c Level - Poor glycemic control is a MAJOR risk factor
- Hypertension – reduction in blood pressure can help protect against progression

# RECOMMENDATIONS FOR EYE HEALTH AND SCREENING<sup>2</sup>

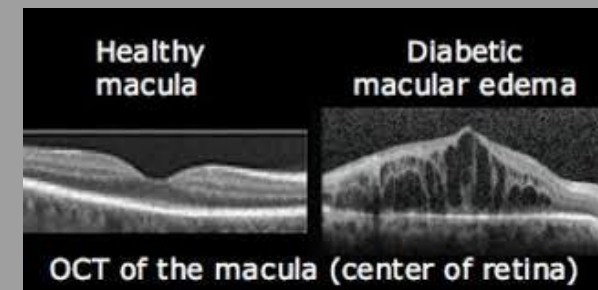
- Screening Recommendations by Type
  - Type 1 – 5 years after onset of disease **AND THEN** annually
  - Type 2 – Prompt screening after diagnosis **AND THEN** annually
- In Pregnancy
  - Type 1 and Type 2
    - Early in the first trimester and THEN
      - No retinopathy up to moderate level – Rechecked in 3-12 months
      - Severe retinopathy or worse – every 1-3 months

# WHAT DOES AN EYE SCREENING TEST LOOK LIKE?

- Visual Acuity Check and Eye Pressure
- Imaging
  - Retina photos
  - OCT – Ocular Coherence Tomography
  - OCTA – OCT Angiography
  - Fluorescein Angiography
- Dilated examination



<https://oscarwylee.ca>

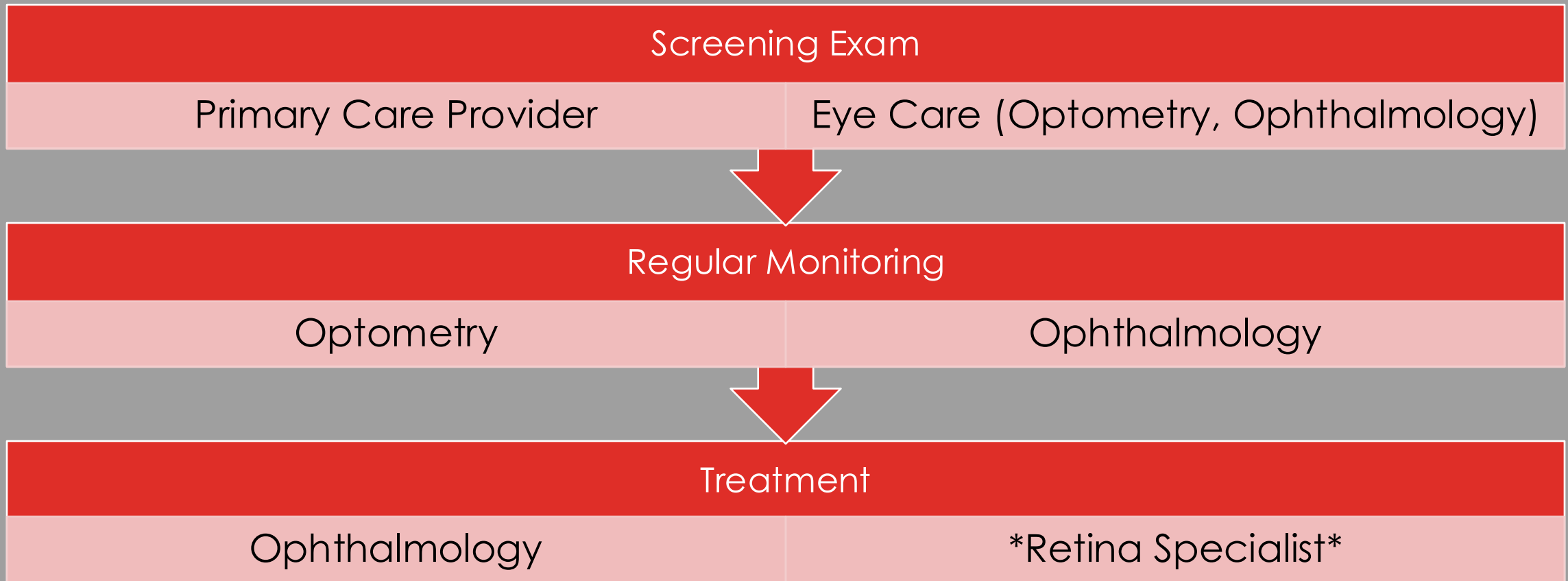


<https://www.retinamd.com/>



<https://www.aaao.org/eyecare-america>

# WHO DO I GO TO AND FOR WHAT?





# MODERN MANAGEMENT OF DIABETES IN THE EYE<sup>2</sup>

- Control of Modifiable Factors
  - Diet and Lifestyle
  - Blood Sugar - Aim for a Hgb A1c  $\leq 7\%$
  - Blood pressure
  - Eye screening exams as recommended
- Injections
  - Anti – VEGF
  - Steroids
  - Other
- Laser Procedures
- Surgery



# RESOURCES

- American Academy of Ophthalmology –EyeSmart
  - <https://www.aao.org/eye-health/diseases/diabetic-eye-disease>
- American Society of Retina Specialists – The Foundation
  - <https://www.asrs.org/patients/retinal-diseases/3/diabetic-retinopathy>
- American Diabetes Association
  - <https://diabetes.org/health-wellness/eye-health/resources>
- Prevent Blindness
  - <https://preventblindness.org/diabetes-and-the-eyes-educational-toolkit/>
- National Eye Institute
  - <https://www.nei.nih.gov/learn-about-eye-health/outreach-resources/diabetic-eye-disease-resources>



## REFERENCES

1. Chen DJ, Kuo JC, Wright AJ, Chuang AZ, Chan W, Feldman RM, Crowell EL. Determining Risk Factors That Affect Progression in Patients with Nonproliferative Diabetic Retinopathy. J Ophthalmol. 2021 Nov 30;2021:6064525. doi: 10.1155/2021/6064525. PMID: 34888097; PMCID: PMC8651358.
2. Lim, J et al., Diabetic Retinopathy Preferred Practice Pattern®, Ophthalmology, Volume 132, Issue 4, P75 - P162



THE END

Thank you for your attention

