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Objectives

<p>Differentiate</p> <p>Distinguish clinical features of Non-Proliferative (NPDR) vs. Proliferative (PDR) disease, focusing on the specific complications that drive vision loss.</p>	<p>Interpret</p> <p>Master the use of retinal imaging modalities—specifically Fundus Photography, Optical Coherence Tomography (OCT), and Fluorescein Angiography (FA)—to stage and monitor disease.</p>	<p>Counsel</p> <p>Apply patient-centered strategies to discuss modifiable risk factors (BSL control) and the “silent” nature of early progression to improve visual outcomes.</p>

2

Diabetic Retinopathy: growing global epidemic

Leading cause of vision loss
 worldwide for patients aged 25–74

700 Million
 people projected to have diabetes by 2045

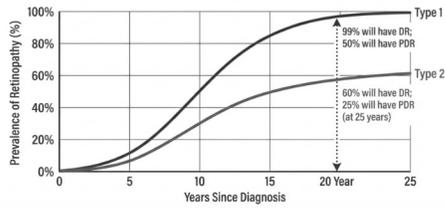
Global DM Population
 1/3 of Global DM patients have DR
 1/3 of those have vision-threatening DR

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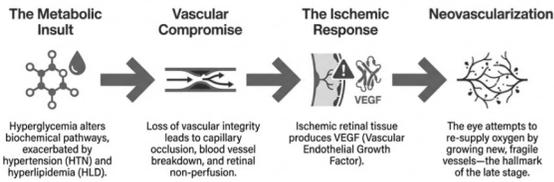
Disease Duration and Prevalence

Insights from the Wisconsin Epidemiologic Study of Diabetic Retinopathy (WESDR)



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Pathophysiology: Vascular Cascade

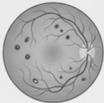


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Disease Classification

Category 1: Non-Proliferative (NPDR)

NPDR



Characterized by intraretinal vascular changes without the development of extravascular tissue. Defined by contained damage (leakage/occlusion).

Category 2: Proliferative (PDR)

PDR



Characterized by retinal neovascularization driven by diabetes-induced ischemia. Represents the most advanced level.

Diabetic Macular Edema (DME) → vision loss
Can occur at ANY severity of diabetic retinopathy

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Non-Proliferative Diabetic Retinopathy (NPDR)

Mechanism:

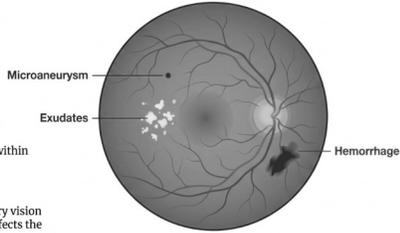
'Leaky' vessels cause retinal swelling;
'closed' vessels cause macular ischemia.

Clinical Signs:

- **Microaneurysms:** Capillary wall breakdown.
- **Exudates:** Tiny particles/lipid deposits forming in the retina.
- **Hemorrhages:** Dot/blot hemorrhages within the retina.

Symptomology:

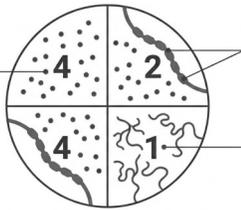
Often asymptomatic in early stages. Blurry vision occurs if DME is present or if ischemia affects the macula.



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Diagnosing Severe NPDR: 4-2-1 Rule

4: Severe intraretinal hemorrhages (>20) in 4 quadrants.



2: Definite venous beading in 2 or more quadrants.

1: Moderate IRMA (Intraretinal Microvascular Abnormalities) in 1 or more quadrants.

(Note: Any one of the following confirms diagnosis)

Importance: Identification of patients at greatest risk of progression to PDR

Prognosis: 15% and 60% risk of progression to high-risk PDR within 1 and 3 years, respectively.

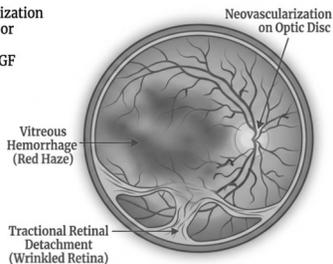
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Proliferative Diabetic Retinopathy (PDR)

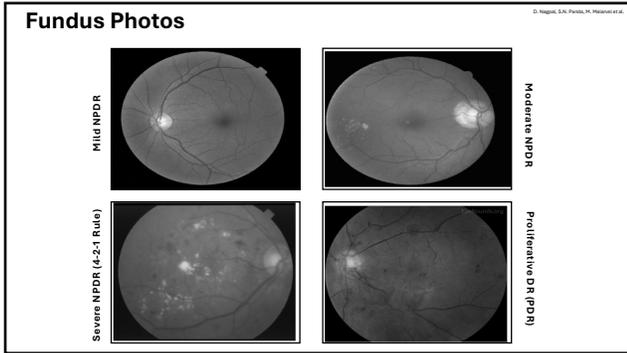
- **Definition:** The presence of neovascularization (new blood vessel growth) on the retina or optic disc.
- **Mechanism:** Driven by high levels of VEGF produced by ischemic tissue.

Complications:

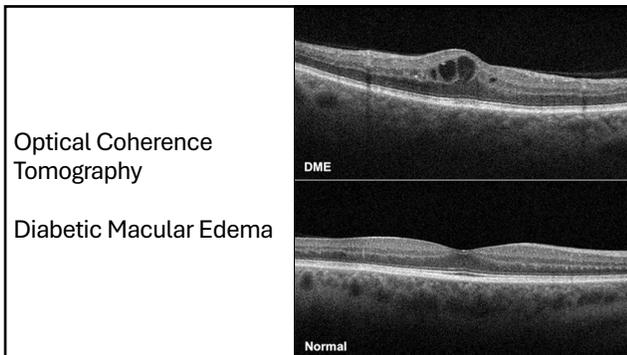
- **Vitreous Hemorrhage:** Fragile vessels bleed into the jelly of the eye (causing floaters or total vision block).
- **Tractional Retinal Detachment:** Scar tissue from new vessels pulls the retina off the back of the eye.
- **Neovascular Glaucoma:** Abnormal vessels block fluid drainage.



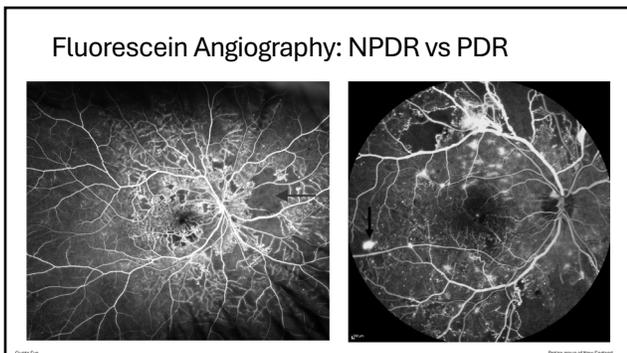
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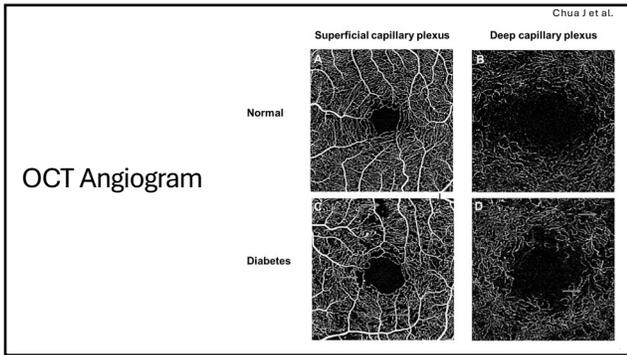
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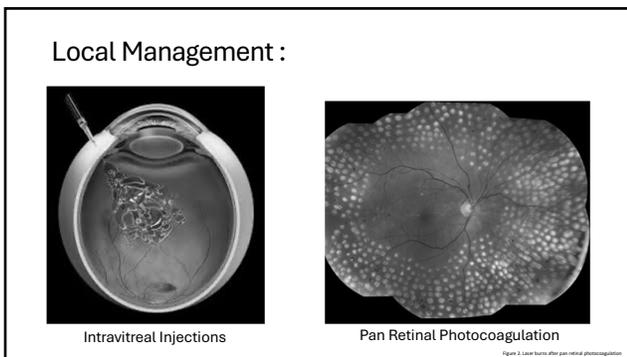
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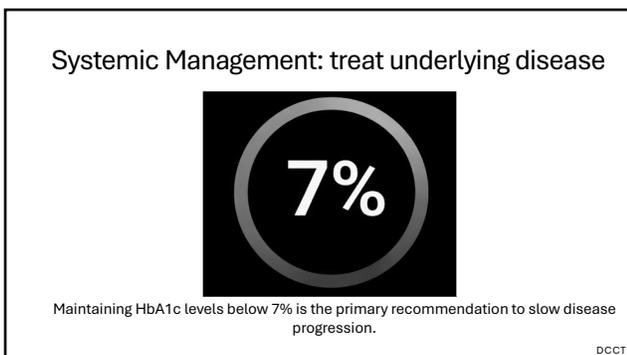
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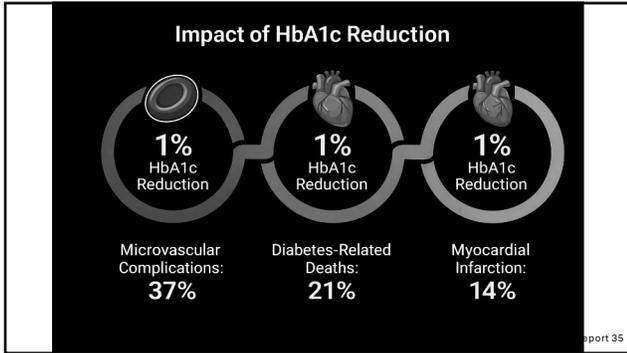
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Communication and Prevention

- The Silent Phase: Emphasize that early diabetic retinopathy often has NO symptoms, making screening vital
- Control blood sugar (PCP/endocrinologist coordination)
- Manage blood pressure and lipids
- Adhere to scheduled dilated eye exams (staged-based follow up)
- Report vision changes immediately

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