

Early Detection of Diabetic Retinopathy : Physician's Role in Preventing Blindness

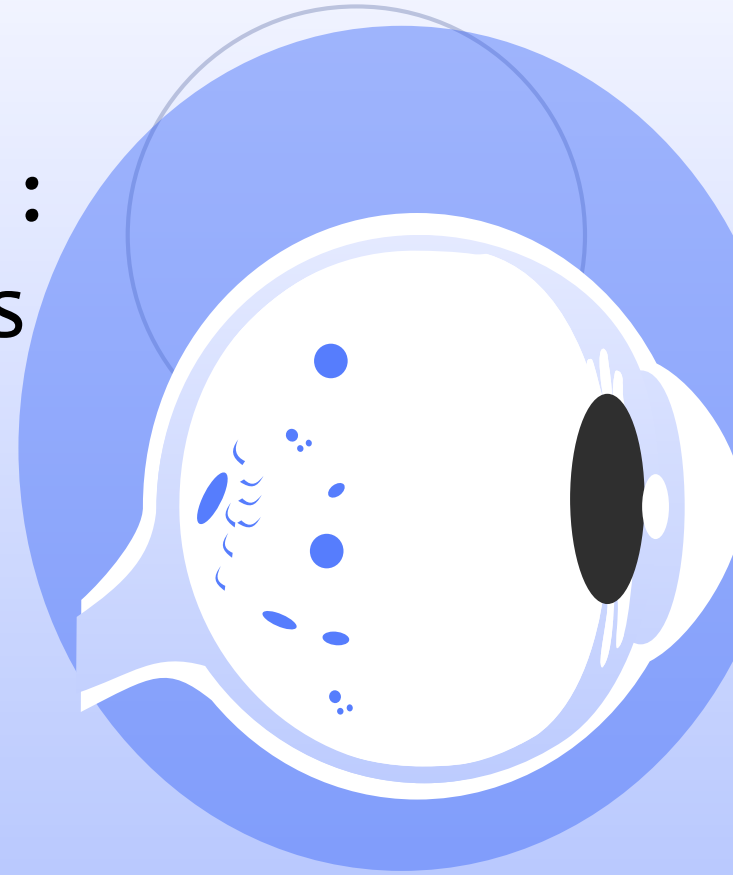
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Diabetic Retinopathy (DR)

DR is a microvascular complication of diabetes that affects the retina and can lead to vision loss or blindness if not detected early

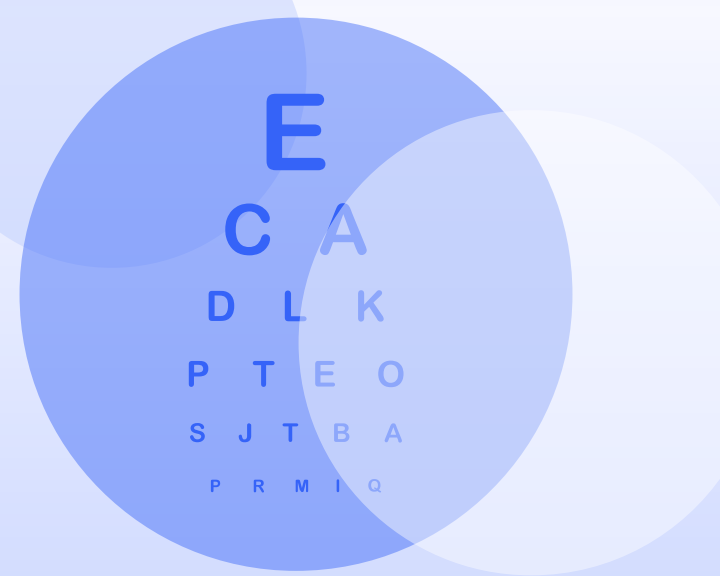


Pathophysiology of Diabetic Retinopathy



- Chronic hyperglycemia → pericyte loss, basement membrane thickening
- Capillary dropout → retinal ischemia
- VEGF upregulation → neovascularization + vascular leakage
- Neurodegeneration precedes visible microvascular changes

Classification (ETDRS)



I. Non-Proliferative DR (NPDR)

- [?] Mild: microaneurysms
- [?] Moderate: hemorrhages, exudates
- [?] Severe (4-2-1 rule):
 - 4 quadrants hemorrhages
 - 2 quadrants venous beading
 - 1 quadrant IRMA

II. Proliferative DR (PDR)

- [?] NVD / NVE
- [?] Vitreous / preretinal hemorrhage
- [?] Fibrovascular proliferation → TRD

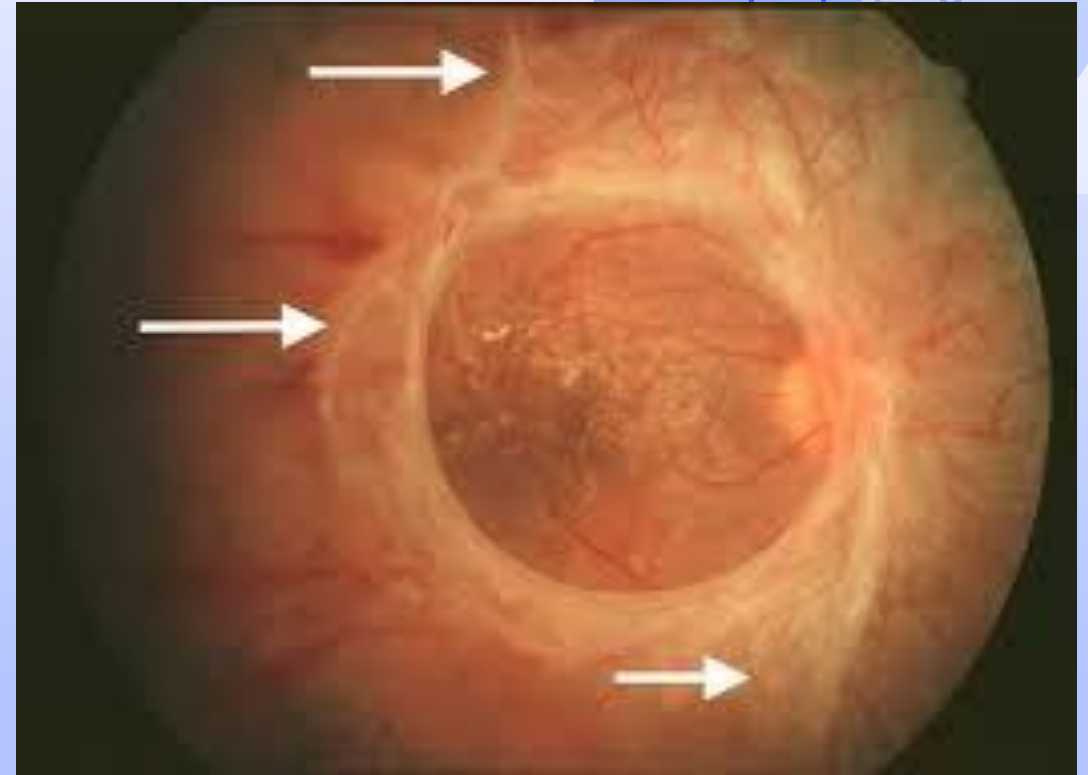
Classification (ETDRS) NPDR

E
C A
D L K
P T E O
S J T B A
P R M I Q



Classification (ETDRS) PDR

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P T F O



Diabetic Macular Edema (DME)

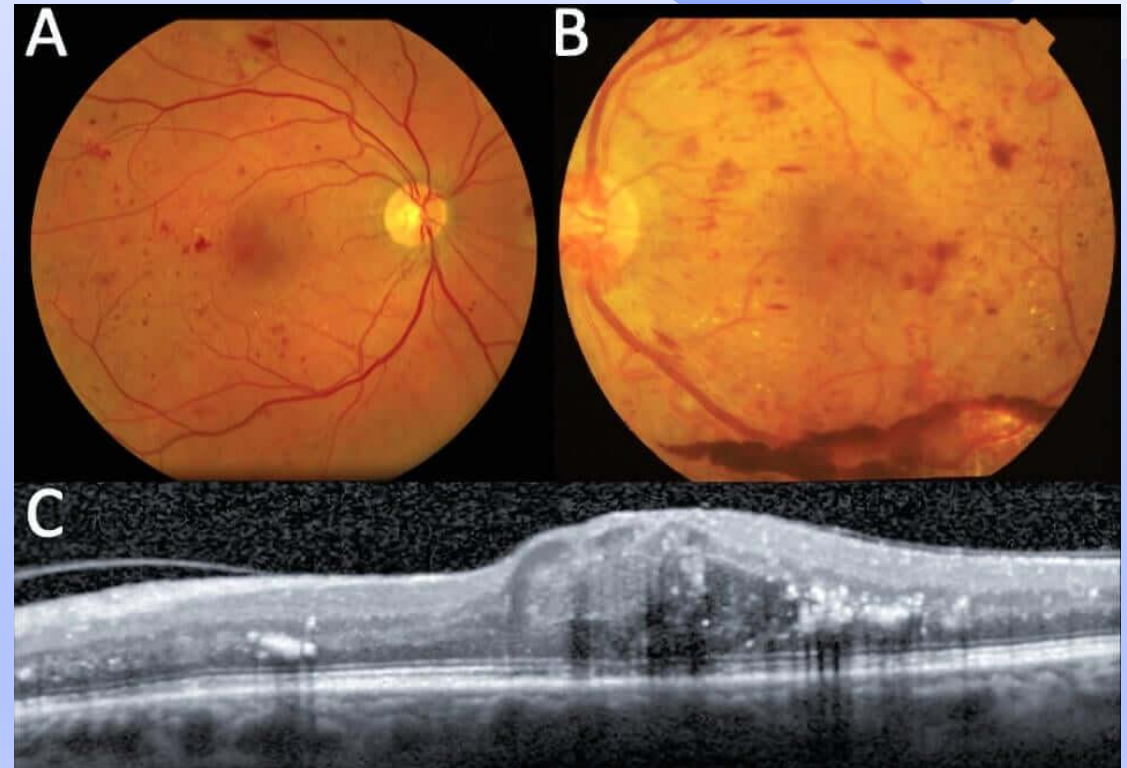
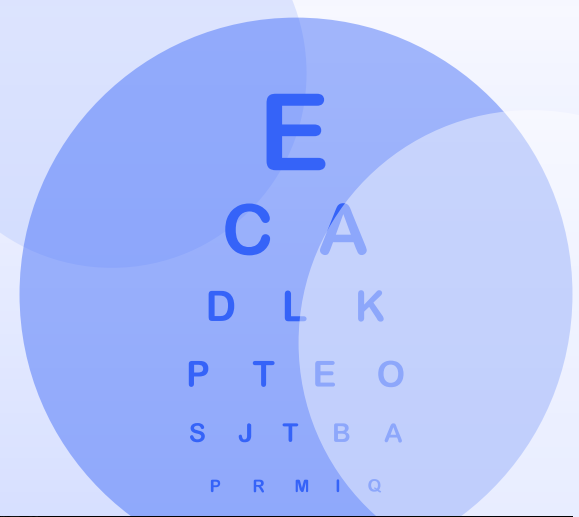
☐ Diabetic Macular Edema can occur at any stage

☐

Types:

Center-involving (CI-DME)

Non-center involving



Prevalence of Diabetic Retinopathy

People with
Diabetes

8–10%



Diabetic Retinopathy

- Overall DR prevalence (Nepal): ~10–20%
- Community-based: ~10%
- Hospital-based: ~20%
- Elderly population: up to 24%
- VTDR: ~9–10%

Risk Factors for Diabetic Retinopathy



High blood pressure

Pregnancy

Family history

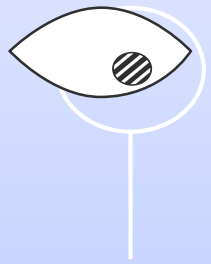


Diabetes

Race

High cholesterol

Symptoms



Blurred Vision

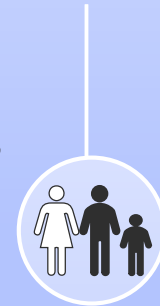


Loss of vision

Floaters



Dark Spots



Treatment



Anti-VEGF Therapy



Laser therapy



Surgery

Why Early Detection Matters ?

- DR remains a leading cause of preventable blindness
- Patients often present late with Diabetic Macular Edema or PDR
- Early-stage disease = best visual outcomes with minimal intervention
- Economic and surgical burden decreases with early detection



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D L K
P T E O
S J T B A

Natural History & Missed Opportunities

- [?] Early Diabetic Retinopathy has no symptoms
- [?] Vision may remain normal until advanced stages
- [?] Patients present late with:
 - Diabetic Macular Edema
 - Vitreous hemorrhage
 - Tractional retinal detachment



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Physician's Role

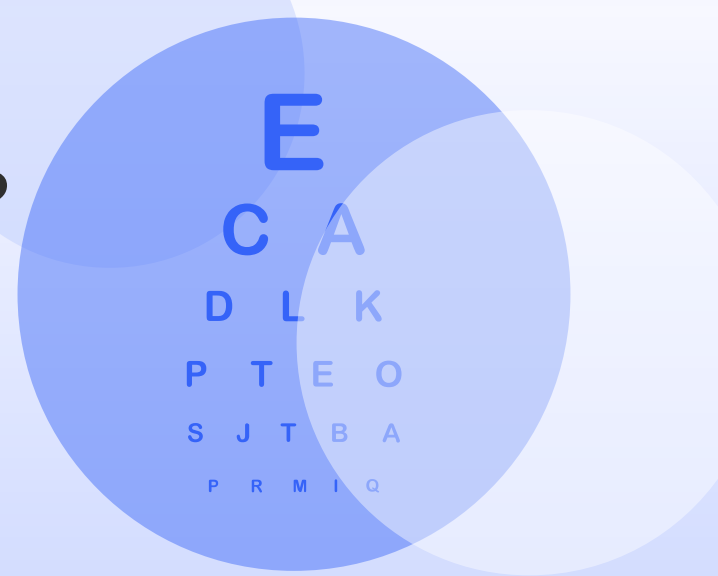
- Ensure yearly fundus examination
- Refer early—even if vision is normal
- Emphasize:
 - HbA1c control
 - Blood pressure
 - Lipid control
- Counsel High-risk groups eg. long-standing diabetics, pregnant women, and those with poor metabolic control who require closer monitoring.
- Document eye referral as part of diabetes care



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Who Needs Screening?

- All diabetics:
 - Type 1 → after 5 years
 - Type 2 → at diagnosis
- Annual screening (minimum)
- More frequent if:
 - Poor glycemic control
 - Pregnancy
 - Long duration diabetes



Red Flags for Urgent Referral

- Sudden vision drop
- Floaters or black spots
- Distorted vision
- Known DR without follow-up



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S J T B A
P R M I Q

What Happens If Detected Early?

- Vision can be preserved with:
Laser
Injections
Monitoring
- Prevents need for complex vitreoretinal surgery



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Challenges in Real-World Practice

- [?]Late presentation
- [?]Limited access to imaging
- [?]Patient compliance issues
- [?]Resource constraints in low-income settings



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Future Directions

- [?] AI-based risk prediction models
- [?] Home-based retinal monitoring
- [?] Integration of systemic + ocular data
- [?] Personalized DR care



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Role of Non-Ophthalmologists

- ☐ Internists / MD physicians → screening + referral
- ☐ Gynecologists → DR progression in pregnancy
- ☐ Nephrologists → strong DR association
- ☐ General practitioners → rural screening



Take-Home Message

- “Check the eye before the patient loses sight.”
- Early referral = vision saved, not just treated
- Managing diabetes = includes eye screening as mandatory tool





**Thank
You**