

Diabetic Retinopathy

[Disclaimer](#)

COVID-19 note

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) and The Royal Australian College of General Practitioners (RACGP) have made recommendations regarding eye examination during the COVID-19 pandemic. See RANZCO – COVID-19: Practical Guidance for General Practitioners Performing Eye Examinations.

Last updated: 20 May 2020

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Background – About Diabetic Retinopathy

Regular retinal examination allows diabetic retinopathy to be detected early.

- Diabetic eye disease
 - Duration of diabetes and glycaemic control are independent risk factors for the development, severity, and progression of diabetic retinopathy.
 - Severe retinopathy may be present with normal vision.
 - Maculopathy can be difficult to see with an ophthalmoscope.
 - Diabetic retinopathy is more prevalent in older age groups with long-standing disease.
 - Younger-onset diabetic patients have twice the prevalence of proliferative diabetic retinopathy compared to older patients who take insulin.
 - Refractive errors occur as the lens changes shape with elevated blood glucose.
- Diabetic retinopathy
 - Classified into non-proliferative, proliferative, and macular oedema.
 - About 20% of patients with type 2 diabetes mellitus (DM) have retinopathy at diagnosis.
 - After 15 years of diabetes, 90% of type 1 patients and 80% of type 2 patients will have retinopathy.
 - Diabetic retinopathy in Australia is still the greatest cause of vision loss in the working age population.
 - Patients with diabetes (type 1 and type 2) are 25 times more likely to experience vision loss than people without diabetes.
 - Some patients will require laser treatment either in isolation or in combination with anti-VEGF injection.
 - Good HbA1c, lipid and hypertension control is essential – the two main risk factors for vision loss from diabetes are control of these factors and duration of disease.
- Optometrists can safely and effectively perform the role of screening and monitoring. Most optometrists have access to equipment such as an OCT (retinal laser scanner) to look for macular oedema.

Assessment

Practice Point

Assess early to prevent vision loss

Diagnosing eye disease early is essential, as vision loss can be prevented or delayed.

1. Assess **risk factors**.

Risk factors

Risk factors for diabetic retinopathy developing and progressing:

- Existing diabetic retinopathy
 - Poor glycaemic control
 - Raised blood pressure (BP)
 - Duration of diabetes > 10 years
 - Microalbuminuria
 - Dyslipidaemia
 - Anaemia
 - Pregnancy
2. Ask about and investigate for the presence of microvascular complications, as retinopathy, peripheral neuropathy, and nephropathy often coexist.
 3. Test **visual acuity**. Normal visual acuity does not preclude sight-threatening retinopathy.

Visual acuity

1. Ask if the patient has distance glasses with them, and if either eye has had known poor vision i.e., a lazy eye.
 2. Test their distance vision in each eye, while wearing glasses, using a 3 or 4 m chart.
 3. Check each eye separately, with distance glasses if worn.
 4. If acuity is subnormal, check with a pinhole.
 5. If vision improves with a pinhole, and no cataract is present, then the patient requires a review of their glasses.
 6. If unable to read any letters on chart, assess the following in descending order:
 - Finger counting
 - Hand movements
 - Light perception
 7. Test near vision while patient is wearing reading glasses.
4. Look for **cataracts**. In diabetes patients, these are more common, seen at a younger age, and progress more rapidly.

Cataracts

Symptoms:

- Blurred vision
- Glare intolerance
- Night vision difficulties
- Colour interpretation becoming more difficult over time.

Signs:

- Light reflex reduced
- Fundus may be difficult to see.

If suspected cataract, manage as per the [Cataract pathway](#).

5. Arrange:
- **screening** and visual acuity examination at initial diagnosis of diabetes.

Screening

Screening is done by an optometrist or ophthalmologist, and consists of dilated fundus examination and retinal photography. If:

- Type 2 diabetes, start regular screening from diagnosis.
- Type 1 diabetes, start screening 5 years after initial diagnosis in patient aged ≥ 12 years (not required in patients aged < 12 years).
- no retinopathy, screen every 1 to 2 years.
- pregnant patient with diabetes, monitor closely during pregnancy, and for 12 months postpartum.

- retinal screening by [optometrist](#) or [ophthalmologist](#) at **recommended intervals**.

Recommended screening intervals

<i>Patient</i>	<i>Review</i>
Type 1 or 2 diabetes	Minimum 2 yearly
Type 2 diabetes at increased risk, poor glycaemic control, poorly controlled hypertension (HT), diabetes > 10 years, dyslipidaemia, anaemia	Review annually
Aboriginal and Torres Strait Islander	Review annually
Established diabetic retinopathy	Every 3 to 6 months by an ophthalmologist
Pregnant	If retinopathy present, review regularly. Repeat 6 to 12 weeks postpartum.

6. Consider **retinal photography**.

Retinal photography

(MBS Items 12325 to 12326)

- An easy-to-use technology that assists in the early detection of glaucoma, macular degeneration, and retinal changes associated with diabetes.
- Available in some general practices.
- See Retinal Photography for Diabetic Retinopathy for instructions.

7. Assess for **retinopathy and maculopathy** if competent and experienced through dilated pupil.

Retinopathy and maculopathy

Retinopathy/maculopathy	Ophthalmoscopy findings
Minimal nonproliferative diabetic retinopathy (NPDR)	Microaneurysms (MA) only
Mild to moderate NPDR	More than just MA, but not as severe NPDR May include: <ul style="list-style-type: none"> • dot and/or blot haemorrhages • cotton wool spots
Severe NPDR	Any of the following: <ul style="list-style-type: none"> • > 20 intraretinal haemorrhages in each of the 4 quadrants • Definite venous beading in ≥ 2 quadrants Prominent intraretinal microvascular anomalies in ≥ 1 quadrant and no signs of proliferative retinopathy
PDR	One of the following (or unexplained fall in visual acuity): <ul style="list-style-type: none"> • Neovascularisation • Vitreous/pre-retinal haemorrhage
Mild macular oedema	Some retinal thickening or hard exudates in posterior pole, distant from macular
Moderate macular oedema	Retinal thickening or hard exudates approaching the centre of the macula, but not involving the centre
Severe macular oedema	Retinal thickening or hard exudates involving the fovea

Management

1. If sudden loss of vision, refer for [immediate ophthalmology assessment](#).
2. Refer for [urgent or routine ophthalmology assessment](#) if:
 - proliferative diabetic retinopathy.
 - severe non-proliferative diabetic retinopathy threatening vision.
 - vitreous haemorrhage.
3. Educate the patient about the importance of prompt medical assessment if they experience any deterioration in vision. Early referral to an optometrist or ophthalmologist can prevent vision loss.

4. **Actively manage** all diabetes risk factors e.g., glycaemic control, blood pressure, lipids, renal function, to help prevent onset and reduce progression of retinopathy. See [Managing Type 2 Diabetes](#).

Active management

- *Optimal glycaemic control decreases the risk of retinopathy progression, but rapid glycaemic control may worsen retinopathy.*
 - *Regularly monitor patients undergoing rapid glycaemic correction to check for deterioration in vision, as they may require specialist assessment and management.*
 - *Treating blood pressure to target and using lipid-lowering therapy reduces the progression of diabetic retinopathy.*
 - *ACE inhibitors and ARBs may have:*
 - *a preventive effect on diabetic retinopathy in type 1 DM.*
 - *a protective therapeutic effect on retinopathy in type 2 DM.*
 - *Statins have a modest protective effect.*
 - *Fenofibrates are independently beneficial – consider them in all type 2 diabetes patients with established non-PDR unless contraindicated.*
5. Discuss driving – regulations may apply to patients with diabetic retinopathy, depending on visual acuity and type of licence held. See Fitness to Drive for specific recommendations.

Referral

- If sudden loss of vision, refer for [immediate ophthalmology assessment](#).
 - Refer for [urgent or routine ophthalmology assessment](#) if:
 - proliferative diabetic retinopathy.
 - severe non-proliferative diabetic retinopathy threatening vision.
 - vitreous haemorrhage.
 - Arrange regular retinal screening by [optometrist](#) or [ophthalmologist](#).
- Information

Information

For health professionals

Further information

- Austroads – [Assessing Fitness to Drive](#) (2016)
- Guide Dogs NSW/ACT – [Diabetic Retinopathy](#)
- NHMRC – [Guidelines for the Management of Diabetic Retinopathy](#)
- Optometry Australia - [Clinical Guideline: Examination and Management of Patients with Diabetes](#)
- RACGP – [Clinical Guidelines: Diabetic Retinopathy](#)
- Vision Initiative – [Diabetic Retinopathy](#)

For patients

- Australian Diabetes Council – [Diabetes and Your Eyes](#)
- Better Health Channel – [Diabetic Retinopathy](#)
- Diabetes Victoria – [Diabetes and Your Eyes](#)
- myDr – [Diabetes Can Affect Your Eyes](#)
- Vision Australia – [Diabetic Retinopathy](#)

References

1. American Diabetes Association. [Diabetic retinopathy position statement](#). Diabetes Care. 2002 Jan;25(1):90-3.
2. Garg S, Davis RM. [Diabetic retinopathy screening update](#). Clin Diabetes. 2009 Oct;27(4):140-5.
3. The Royal Australian College of General Practitioners. [General practice management of type 2 diabetes 2016–2018](#). East Melbourne, Victoria: RACGP; 2016.

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Last updated: June 2020