

# diabetes & your eyes

People with diabetes have an increased risk of developing eye complications which, if left untreated, can lead to poor vision and blindness. However, 98% of serious vision loss from diabetes can be prevented with regular eye examinations and early treatment. The earlier the treatment, the better the result.

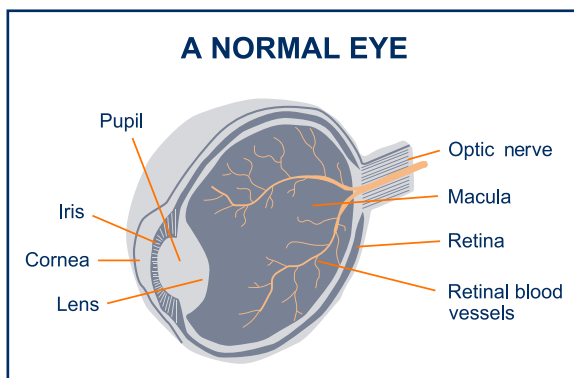


Diagram reproduced from Management of Diabetic Retinopathy: a guide for general practitioners, NHMRC, published by Commonwealth Department of Health and Family Services, June 1997.

## How does the eye work?

The eye works a bit like a camera. Light enters through the cornea and the pupil then passes through the lens which focuses light on the retina. Special cells in the retina detect the light, forming the focused image like the film in the camera. The image is sent along the optic nerve to the brain. At the centre of the retina is the macula which is responsible for the 'seeing' part of our central vision while the retina is responsible for 'seeing' from the edges of our vision.

## How can diabetes affect the eyes?

High blood glucose levels can cause changes in the shape of the lens which can temporarily cause blurring of your vision. This commonly occurs before being diagnosed with diabetes or when diabetes is out of control. When blood glucose levels are reduced through appropriate treatment, the blurriness usually disappears. Therefore getting new glasses should be delayed until blood glucose levels are under better control.

**Persistently high blood glucose levels can increase the risk of more serious eye problems in people with diabetes, including:**

- |                  |             |
|------------------|-------------|
| > Retinopathy    | > Cataracts |
| > Macular oedema | > Glaucoma  |

**As many people with diabetes do not notice changes in their vision until the condition is very serious, it is essential to have regular eye examinations to detect problems early.**



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## Retinopathy

- *Non-proliferative (background)* – The longer you have diabetes, the greater the risk of small blood vessels at the back of the eye being damaged by high blood glucose and high blood pressure. This can result in leakage and often progresses to blockage of the vessels that supply the retina with nutrients. This stage is called *non-proliferative* or *background* retinopathy and there may be no noticeable change in your vision.
- *Proliferative* – Without early detection and treatment, non-proliferative diabetic retinopathy can progress and the retina may grow new blood vessels. This advanced stage is called *proliferative* retinopathy. The new blood vessels are weaker and can bleed onto the retina or the vitreous, the jelly-like centre inside your eye. Vision can be affected, sometimes seriously and suddenly.

The growth of new vessels may also lead to scar tissue development which can cause further problems such as a retinal detachment. Once these changes occur it is hard to restore any lost vision and the resulting damage can lead to blindness. Sometimes new vessels may grow on the iris and this can lead to *neovascular glaucoma* (see below).

## Macular oedema

Blood vessels in the macula, the central area of the retina, can leak fluid causing swelling and can result in central vision loss.

## Cataracts

Changes or problems in the lens can result in clouding and decreased vision known as cataracts. Although ageing is the main risk factor, people with diabetes tend to develop cataracts at a younger age and more rapidly.

## Glaucoma

Glaucoma is an eye disease in which the optic nerve is damaged. The progression of glaucoma is usually slow. Glaucoma can affect anyone but it appears to be more common in people who have diabetes. People with diabetes may also have a less common form of glaucoma which develops as a complication of severe diabetic retinopathy – this is called neovascular glaucoma.

## What are the symptoms of diabetes-related eye damage?

Often diabetes-related eye complications have no signs or symptoms and there may be no obvious deterioration in vision until the condition is quite advanced. Changes in vision may also be so gradual that you do not notice it for some time.

### Where signs and symptoms are present, they can include:

|                                   |  |
|-----------------------------------|--|
| > Floaters and flashes            | > Blurry, blocked or dim vision                            |
| > Poor night vision               | > Halos around lights or sparkles                          |
| > Sensitivity to light and glare  | > Need for brighter light for reading and other activities |
| > Distortion or 'holes' in vision | > Frequent changes in eyeglass prescriptions               |

Any change in your vision should be checked by your optometrist, ophthalmologist or doctor.

## Caring for your eyes

- Have an eye examination by an eye care professional when you are first diagnosed with diabetes and then at least every two years (or more often as indicated by your doctor or eye care professional).\*
- Examination of your eyes involves viewing the back of your eyes. This will involve adding eye drops to dilate the pupils or taking a photograph of the back of your eyes.
- If retinopathy is detected, you will need to have your eyes examined more often and you may be referred to a medical eye specialist (ophthalmologist).
- Notify your eye care professional immediately if you notice any changes in your vision.
- Keep your blood glucose levels, HbA1c, blood pressure and cholesterol at recommended levels. Discuss with your doctor or diabetes educator. High blood glucose, cholesterol and blood pressure increase the risk of eye damage and affect its severity.
- Have regular health checks including blood pressure readings, cholesterol measurements and kidney function tests as recommended by your health care team.
- If you smoke, stop!
- Maintain a lifestyle that includes regular physical activity and healthy eating to better manage your blood glucose levels.
- Always take your medications as prescribed by your doctor.

## Can diabetes-related eye complications be treated?

Most eye complications can be treated to prevent further deterioration. However treatment generally cannot restore vision once it has been lost. Regular eye examinations and early treatment are therefore important to prevent vision loss.

### The most common treatments for eye complications are:

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- > **Laser** – This involves the use of a special form of light of a specific wavelength that is able to heat retinal tissue and blood vessels to minimise leakage from blood vessels and to cause regression of new vessels if present.
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- > **Surgery** – A surgical procedure called a *vitrectomy* is used in cases of advanced retinopathy. It involves the use of fine instruments inside the eye with the aim of repairing the most severe damage caused by diabetic retinopathy.
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- > **New treatments** – If your condition is not responding to other treatments, your eye care professional can give you more details of new treatments that are constantly being developed.
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\* Frequency of examination may vary with different people eg: people with type 1 diabetes, children, women during pregnancy and people who already have eye complications.

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## Who will look after my eyes?

Your eye health care team will include your general practitioner, an optometrist and as required an ophthalmologist.

### General practitioner

Your GP will support you in your day-to-day diabetes management and will be the contact point for referral to other specialist health care team members as required.

### Optometrist

An optometrist may be involved in the ongoing management of your eye health. An optometrist will diagnose and manage diabetes-related eye complications. If changes are detected by your optometrist, this will be reported to your GP and if necessary you will be referred to an ophthalmologist.

To find your nearest optometrist visit [www.optometrists.asn.au](http://www.optometrists.asn.au)

### Ophthalmologist

An ophthalmologist (medical eye specialist) may also be involved in the ongoing management of your condition. An ophthalmologist will be involved if specialised medical care or treatment is required, such as laser surgery or other specialist procedures to improve vision or to prevent loss of vision.

For more information about ophthalmologists visit [www.ranzco.edu](http://www.ranzco.edu)

### For further information contact:

- Vision 2020 Australia [www.vision2020australia.org.au](http://www.vision2020australia.org.au)
- Eyes on Diabetes [www.eyesondiabetes.org.au](http://www.eyesondiabetes.org.au)

This resource was developed in consultation with Vision 2020 Australia and members including the Optometrists Association Australia, The Royal Australian and New Zealand College of Ophthalmologists and the Royal Victorian Eye and Ear Hospital.

## Would you like to join Australia's leading diabetes organisation?

- > Dietary services
- > Free magazines
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For more information phone **1300 136 588** or visit your State/Territory Organisation's website:

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|------------|--|------------|--|
| <b>ACT</b> | <a href="http://www.diabetes-act.com.au">www.diabetes-act.com.au</a>       | <b>NSW</b> | <a href="http://www.diabetesnsw.com.au">www.diabetesnsw.com.au</a> |
| <b>NT</b>  | <a href="http://www.healthylivingnt.org.au">www.healthylivingnt.org.au</a> | <b>QLD</b> | <a href="http://www.diabetesqld.org.au">www.diabetesqld.org.au</a> |
| <b>SA</b>  | <a href="http://www.diabetessa.com.au">www.diabetessa.com.au</a>           | <b>TAS</b> | <a href="http://www.diabetestas.com.au">www.diabetestas.com.au</a> |
| <b>VIC</b> | <a href="http://www.diabetesvic.org.au">www.diabetesvic.org.au</a>         | <b>WA</b>  | <a href="http://www.diabeteswa.com.au">www.diabeteswa.com.au</a>   |

The design, content and production of this diabetes information sheet has been undertaken by the eight State and Territory member organisations of Diabetes Australia Ltd listed below:

- > Diabetes Australia – NSW
- > Diabetes Australia – Queensland
- > Diabetes ACT
- > Diabetes SA
- > Diabetes Victoria
- > Diabetes Australia – Tasmania
- > Diabetes WA
- > Healthy Living NT

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