



## Diabetes and your eyes

### Key Points

- | Having diabetes can damage your sight
- | There is a lot you can do to cut down the chance of damaging your sight
- | There is also a lot that can be done to halt existing damage
- | Diabetes eye damage must be picked up early for it to be successfully stopped or treated

For many years diabetes has been the leading cause of people developing blindness in New Zealand. However, with new advances in preventing or treating diabetes eye damage, the number of people developing changes to their sight through diabetes is decreasing. Existing damage can often also be halted, or prevented from getting worse.

Diabetes eye damage must be picked up early for it to be successfully stopped or treated. If damage is picked up late there is often not much that can be done to save your sight.

Some people already have the early signs of diabetes eye damage when they first find out they have diabetes. Therefore it's very important that you have a full diabetes eye check when you first know you have diabetes. From that time on you should have a full eye check at least every two years.

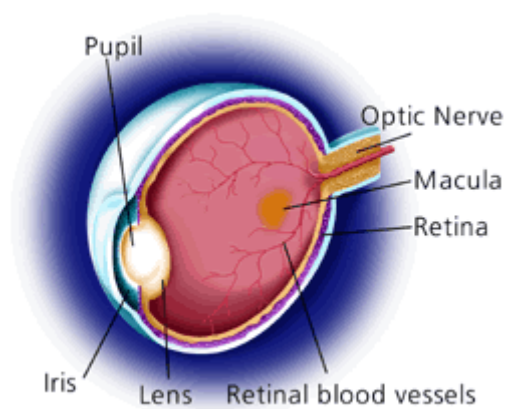
Diabetes eye damage is sometimes called a 'silent' disease. This is because the damage can be happening a long time before you notice any change at all in your sight. By the time your sight changes the damage is often very bad. Don't wait until you notice your vision is changing before you have your eyes properly checked.

So, it's really important to:

- | Get a full diabetes eye check when you first find out you have diabetes
- | Have regular diabetes eye checks every two years once you know you have diabetes
- | If you already have any diabetes eye damage have checks and treatment as directed by an eye specialist

### How can diabetes affect my eyes?

It is easier to understand this if you know about some of the parts of your eye and how these parts work. The two main parts of your eyes that diabetes can affect are called the 'lens' and the 'retina'. Damage to your retina is usually more serious (and also often more common in those with diabetes)



## What are the lens and the retina?

Our eyeballs have a front and a back. The front of our eyes (the part we look out of) is the lens. People who need to wear glasses usually have some sort of problem with the lens of their eye. The glasses act like an extra lens that corrects the problem in the eyeball's lens underneath. You may have changes in your lens that has nothing to do with your diabetes.

The back of your eyeball is your retina. This is a light sensitive disc that picks up the picture that comes through your lens. The lens and the retina of your eyes work a bit like a movie projector and a screen. The projector is like your lens and the screen is like your retina.

If the lens the picture goes through (the movie projector) is wrongly focused or damaged, the picture on the screen will not be right. This problem can usually be fixed by refocusing the lens (having glasses) or putting a new lens onto the projector (having surgery to remove the old lens and implant a new lens into your eye).

If the screen the picture is projected onto is twisted or has holes or black spots in it the picture will also not be right. Your retina acts like the screen the picture is projected onto. Unfortunately, if your retina (or screen) is damaged this is often harder to fix.

## What can go wrong with my retina if I have diabetes?

Damage to your retina through diabetes is called 'diabetic retinopathy'. It is important to remember that diabetic retinopathy is a process. It has a beginning and a middle and an end. The end point of diabetic retinopathy results in total loss of vision (or blindness). Fortunately, the beginning part (and to some extent the middle part) can often be successfully treated or at least stopped from getting worse.

Unlike a movie screen (that is usually a piece of vinyl) your retina is a piece of living tissue. This means it needs a good blood supply to keep it healthy. If things go wrong with this blood supply it can damage pieces of the screen. If the damage is too bad the whole of the screen can be wiped out. This results in total blindness.

In diabetes it is mainly damage to the blood vessels in the retina that can cause problems. The blood vessels can become leaky, blocked, or too small to let through enough blood. There are two types of diabetic retinopathy:

- I **Background Retinopathy**. This is the commonest form of diabetic retinopathy. It is caused by different types of problems with existing blood vessels within the eye. The problems involve bleeding from blood vessels and leakage of fats and fluids into the tissue of the eye. If these problems occur in one particular part of the eye (the macula), reduced vision will result. However, normally this form has no effect on vision and needs no treatment. Sometimes, though, it can lead to the more serious form
- I **Proliferative Retinopathy**. This is a more serious condition and starts out as background retinopathy. It is caused by the growth of very fine, delicate blood vessels which tend to bleed very easily. The bleeding itself can cause problems with vision, as can the scar tissue which may form at the point that bleeding occurs

## Who's at risk of Retinopathy?

Several factors influence whether you get retinopathy. These include your blood glucose levels, your blood pressure levels, how long you have had diabetes, and your genes (some people, naturally, are more likely to develop this condition).

The longer you've had diabetes, the more likely you are to have retinopathy. Almost everyone with type1 diabetes will eventually have background retinopathy. And most people with type2 diabetes will also get it. But the retinopathy that can destroy vision (proliferative retinopathy) is far less common.

People who keep their blood glucose levels closer to normal are less likely to have retinopathy. Or if they do, it's more likely to be the less sight-threatening background retinopathy.

## What can go wrong with my lens if I have diabetes?

People with diabetes are more at risk of getting cataracts.

Many people without diabetes get cataracts, but people with diabetes are twice as likely to develop this eye condition. People with diabetes also tend to get cataracts at a younger age and have them progress faster. With cataracts, the eye's lens clouds, blocking light.

Cataracts can very nearly always be successfully treated. For early cataracts, you may need to wear sunglasses more often and use glare-control lenses in your glasses. For cataracts that interfere greatly with vision, doctors usually remove the lens of the eye. Sometimes, you get a new implanted lens. This is usually a very simple surgical procedure and most people only need to stay in hospital for 6 to 8 hours to have this done.

## Glaucoma

People with diabetes are almost twice as likely to develop glaucoma than people without diabetes. Glaucoma occurs when pressure builds up in the eye. The pressure pinches the blood vessels that carry blood to the retina and optic nerve. This damages the retina and the nerve and it can cause gradual loss of vision. There are several treatments for glaucoma. Some use drugs to reduce pressure in the eye, while others involve surgery.

## Can I prevent diabetic eye damage?

You may not be able to prevent eye damage entirely, but you can do much to reduce your chance of getting it; and to stop it getting worse if you already have it. However, to either prevent it or stop it getting worse it is best to take action early.

## How do I delay or prevent eye damage?

- | Have regular full diabetes eye checks
- | Maintain healthy blood glucose levels. One US study showed that people who improved their blood glucose levels had their risk of developing retinopathy cut back by 40 to 70 percent.
- | Maintain a healthy blood pressure. High blood pressure has been shown to make eye problems worse
- | Quit smoking
- | Maintain healthy blood lipids (cholesterol)
- | Report any changes in your sight urgently and immediately to your doctor

## What changes of vision should make me see my doctor?

- | shadows or black spots over your vision
- | blurred vision
- | trouble reading
- | seeing double
- | pain in one or both eyes
- | a feeling of pressure in your eye/s
- | things at the side of your vision becoming less clear

## What is a Diabetes Eye Check?

A check for diabetic eye disease involves a specially trained health professional either looking at, or photographing, the backs of your eyes (or retinas).

To see your retinas properly they shine a light through the pupils of your eyes to look in the back of your eye. They usually need to dilate (or make larger) the pupils of your eyes so they can see the whole of the retina. This is done by putting special drops in your eyes before doing the check.

Once your pupils are dilated the person can either shine a light into your eyes to look at the retina themselves or take a photograph of the back of your eye. This photograph is then sent to an eye specialist to look at.

## How do I get a diabetes eye check?

The proper eye check for diabetes is not the same as the eye check you have to see if you need glasses. When you get your eyes checked out for

glasses you are having the function of the front (or lens) of your eye checked. Usually it is an optometrist (or optician) who checks your eyes for glasses.

The eye check for diabetes is checking the back of your eye (or retina) as well as the lens. This check should be done by someone who is specially trained to do diabetes eye checks. They will often use a special camera to take photographs of the back of your eye. Every District Health Board has an eye screening service that is free for people with diabetes.

Ask your doctor (GP) for information about how to have a diabetes eye check. Your GP or diabetes health professional, can refer you in to a specialised diabetes eye screening service.

### **What if I already have Diabetic Retinopathy?**

The usual treatment for damage to your retina is by laser therapy. Laser treatment seals leaking or new blood vessels. It mainly works by preventing and delaying further damage from occurring. This type of treatment is almost always done by eye specialists. You don't have to be admitted to hospital to have laser therapy. It is usually done in eye outpatient services.

Surgical treatment (called vitrectomy) may be needed if bleeding from the retina into the eyeball is causing persistent cloudy vision or if scarring has occurred. Surgery is also available if the retina becomes detached from its base (which sometimes happens if you have proliferative retinopathy).

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