

Ophthalmology department

Diabetic retinopathy: causes, symptoms and treatment

Information for patients, relatives and carers

Introduction

Diabetes can cause changes to your eyes that can lead to loss of vision and blindness. Diabetic retinopathy is one way this can happen. This leaflet tells you what the changes are and what you can do to avoid them. We hope it answers some of the questions you or those who care for you have. This is not a replacement for the discussion you have with your clinical team. We're here to answer your questions, so please contact us using the details on page 6.

How does diabetes affect the eye?

Diabetes can affect your eyes. It starts to do this when your blood sugar levels are:

- often too high, or
- always fluctuating between high and low

There are often no early warning signs when damage starts. This is because the changes are gradual. They happen little by little.

The light-sensitive nerve tissue at the back of the eye is called the retina. Diabetic changes can affect the small round centre of the retina, which is called the macula.

The macula is responsible for your detailed central vision. You use it to see things directly in front of you, and for tasks like reading and driving.

Early-stage diabetic retinopathy

Having high, low or fluctuated blood sugar levels for a long time can damage blood vessels in your eye. They can then leak fluid or blood into the retina. These are the **early stages of diabetic retinopathy**. Importantly, you may not notice changes in your vision at this stage.

Build up

Fluid and blood from these damaged blood vessels can build up in the layers of the macula. This is called **macular oedema**. It often happens in patients who have signs of diabetic retinopathy. This can affect the central vision. It can make everything you see appear crooked or out of shape. This is also known as **distortion**. In some cases, there is complete loss of part of the vision. This may affect your ability to perform even simple everyday tasks such as reading.

Advanced diabetic retinopathy

Obstructed blood flow and lack of oxygen (ischaemia) to the retina can lead to the growth (progression) of new blood vessels in the retina. These blood vessels can bleed easily. They usually grow inside the eye and can pull the retina with them, causing retinal detachment.

With both conditions, your vision might be lost. Urgent treatment is needed to reduce the risk of partial loss of vision or full permanent loss of vision.

How many people in the UK have diabetic retinopathy?

Research shows almost 5 million people in the UK are believed to be living with diabetes. Of these, 9 out of 10 (90 per cent) have type 2 diabetes. At least one third of these people have diabetic retinopathy with decreased vision that reduces their quality of life. So, that's more than 1 million people.

Studies have shown the longer you have diabetes, the more likely you are to have changes to your retina.

To reduce your **risk** of diabetic retinopathy and sight loss in later years, research shows it is important to

- control your blood sugar level
- control your fasting glucose level (HbA1C)

What other eye conditions are linked to diabetic retinopathy?

Glaucoma

Glaucoma is one of the fastest-growing causes of blindness worldwide. There are five types of glaucoma. The most common is **primary open-angle glaucoma**.

Your risk of primary open-angle glaucoma is almost twice as high if you have:

- diabetes that is not well-controlled, or
- diabetic retinopathy, or
- both

Like diabetic retinopathy, your risk of developing glaucoma increases if you've had diabetes for a long time.

Cataract

Cataract is a very common eye condition across the world. It is when the lens, a small transparent disc inside your eye, develops cloudy patches. It is often associated with getting older. But common for patients with diabetes to develop cataracts at a younger age.

This happens more to patients who:

- have had diabetes for a long time
- do not have well-controlled diabetes

Also, there is an increased risk of complications after cataract surgery. This can affect the retina and macula. Extra treatment and closer monitoring are often needed in the months after surgery.

Gestational diabetes

Gestational diabetes is high blood sugar (glucose) that develops in pregnant women. It usually disappears after giving birth. It is a common complication of diabetes.

Expectant mothers who get gestational diabetes are at much greater risk of developing type 2 diabetes in the future.

Pregnancy can result in the mother's body being less able to use the hormone insulin to absorb sugar (glucose) from the bloodstream. This increases sugar levels in the bloodstream. This in turn can increase inflammatory and growth factors that can cause diabetic retinopathy.

How can I reduce my risk of developing diabetic eye damage?

Here are five things you can do to reduce your risk of diabetic retinopathy, or stop it from getting worse:

1. Go to annual diabetic eye screening

Eye screening is done in the community. It's very effective in noticing early changes. It can prevent any vision loss or stop it getting worse.

Screening started in 2003. Since then, it has reduced the number of people certified as visually impaired from diabetic retinopathy. Numbers have fallen from just over **5 in a 100** (5.5 per cent) in 2010, to just over **3 in 100** (3.5 per cent) in 2019.

So, go to your annual screening to help protect your sight.

After screening, if needed you can be referred for:

- a more specialised opinion
- observation
- treatment

See NHS information on diabetic eye screening: www.nhs.uk/conditions/diabetic-eye-screening/

2. See your optician if you notice any changes to your vision

If you notice any changes to your vision do not wait for your next eye screening appointment. Go to **your local optician as soon as possible**. If urgent, they will ask you to go to your local eye emergency department.

Some of the early signs of diabetic retinopathy include:

- dots and lines in your vision (floaters)
- distorted vision
- blurred, more faint or less clear vision

3. Monitor and manage your blood sugar levels

This is vital. Blood sugar levels that stay high for a long time are a leading cause of diabetic eye complications and vision loss.

Research shows that if you have type 1 or type 2 diabetes, you can cut your risk of retinopathy by up to a third. You can do this by controlling and monitoring your blood sugar levels.

So, you can:

- check your blood sugar levels at home
- establish your target levels with your GP or diabetes specialist team
- ask them to monitor your HbA1C test – also known as the ‘three-month test’

4. Control your blood pressure

Blood pressure is also a risk factor as it can affect blood flow. Effective control of blood pressure has been proven to decrease the risk of diabetic retinopathy by at least 30 per cent.

5. Control your cholesterol

Cholesterol is another potential risk. Poor blood circulation caused by raised cholesterol levels can also occur in the blood vessels in the eye. This can contribute to the increased risk of fluid build-up in the macula. The retina can be damaged if nutrients cannot reach the eye and waste cannot be removed.

Who will help me monitor my diabetes?

Your GP will help to manage your condition with you. In some cases, it may be more difficult to control your diabetes. You may need to be referred to a specialist team for more expert advice and management.

You can also monitor your blood pressure at home. You can report any consistently abnormal readings to your GP or at your next appointment.

Can lifestyle changes reduce my risk of diabetic eye damage?

Yes, studies have shown that you can improve your eye health, as well as your general health, if you make positive changes to your lifestyle.

Here are four changes to consider:

1. **Take regular exercise** – research has revealed that moderate exercise can reduce or stop new blood vessel growth in the diabetic eye by up to 45 per cent.
2. **Drink less alcohol or stop altogether** – research shows you are 16 per cent more likely to get diabetic retinopathy if you drink alcohol. And if you've already got diabetic retinopathy, it is 30 per cent more likely to get worse if you drink alcohol.
3. **Stop smoking** – smoking can increase your risk of developing diabetes by up to 40 per cent. It's known to decrease retinal blood flow and the delivery of oxygen-rich blood to the retina.
4. **Choose a healthier diet** – it's a good idea to consult a dietitian who can support you with the best diet for your diabetes and eye health. There's been lots of research about how different diets can reduce the effects of diabetic retinopathy.

For more ideas, visit www.diabetes.org.uk/living-with-diabetes

What are the treatments for diabetic eye complications?

You're likely to need treatment to prevent sight loss to your affected eye or eyes.

Before you give consent to treatment, we'll discuss with you:

- the treatment you need
- its intended benefits
- its potential risks

You'll be able to ask any questions.

The most common treatments include:

- **eye injections** – these are used to treat build-up of fluid in the macula layers (diabetic macular oedema). If this treatment is recommended, you're likely to need more than one injection. This can improve your vision. It also slows down the damage caused by the leaking blood vessels
- **laser treatment** – this procedure is used to maintain existing vision and prevent it from getting worse
- **steroid implants** – this is a similar procedure to eye injections. These are used to treat long-term build-up of fluid in the macula layers and inflammation

If you develop glaucoma, you will also need to be screened by the glaucoma service.

- treatment is often a long-term prescription of one or more eye drops. These keep the pressure inside the eye (intraocular pressure) stable
- if eye drops do not work, you may need laser treatment to the front of the eye or surgery

If you develop cataracts, the only treatment is surgery.

If you do develop cataracts, these will be assessed at every face-to-face appointment.

You will be offered to be listed for surgery if:

- your cataracts are affecting your quality of life, or
- we cannot view the retina (particularly the macula) or the optic nerve with any of our equipment

If you develop very advanced retinopathy, you may need to have retinal surgery. If you develop regular bleeding from the retina into the eye, you may have very advanced retinopathy. You may need surgery. We will refer you to another service in the Trust. They specialise in this type of surgery and can decide if surgery is needed.

Who can I contact for more information?

- your GP
- outpatients at Western Eye Hospital – **020 3312 3236**
- outpatients at Charing Cross Hospital – **020 3311 1109**
- Diabetes UK – **0345 123 2399** or helpline@diabetes.org.uk
- Macular Society – **0300 3030 111** or help@macularsociety.org

Sources of support and information

- Diabetes UK – www.diabetes.org.uk
- Macular Society – www.macularsociety.org
- RNIB – www.rnib.org.uk
- National Eye Institute – www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/diabetic-retinopathy

How do I make a comment about my visit?

We aim to provide the best possible service, and staff will be happy to answer any of the questions you may have. If you have any **suggestions** or **comments** about your visit, please either speak to a member of staff or contact the patient advice and liaison service (**PALS**) on **020 3312 7777** (10.00 – 16.00, Monday to Friday). You can also email PALS at imperial.pals@nhs.net The PALS team will listen to your concerns, suggestions or queries and is often able to help solve problems on your behalf.

Alternatively, you may wish to complain by contacting our complaints department:

Complaints department, fourth floor, Salton House, St Mary's Hospital, Praed Street
London W2 1NY

Email: ICHC-tr.Complaints@nhs.net

Telephone: **020 3312 1337 / 1349**

Alternative formats

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imperial.communications@nhs.net

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