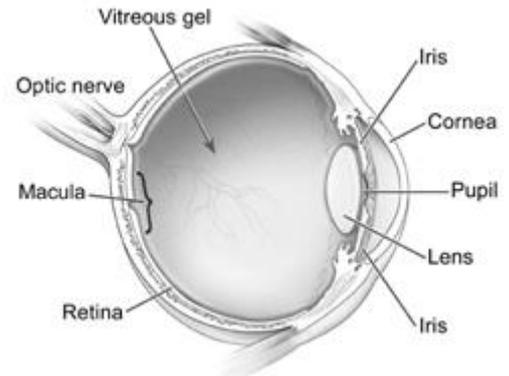


## Diabetic Eye Disease – Laser Treatment

### Diabetic eye disease

Diabetic eye disease refers to a group of eye problems that people with diabetes may face as a complication of diabetes. All can cause severe vision loss or even blindness.

Diabetic retinopathy is caused by damage to the blood vessels in the retina – the light sensitive layer of tissue that lines the inside of the eye and sends visual messages through the optic nerve to the brain.



### What treatment can I have?

Laser treatment uses an intense beam of light that is directed in small spots onto your retina. This machine is almost the same as the one we use to examine your eyes at each clinic visit. We perform your laser treatment in an outpatient clinic.

There are 2 possible reasons why we will recommend that you have laser treatment.

1. For **proliferative retinopathy** or its early stages, known as pre-proliferative retinopathy
2. For **macular oedema** that may damage your sight

### What is the aim of treatment for proliferative retinopathy and how does it work?

In proliferative retinopathy, the fine vessels in your retina have been damaged by a high level of blood sugar and they have closed down. This in turn starves your retina of nutrition, so the retina sends out signals that cause new vessels to develop. These new vessels are the main threat to your sight.

Your laser treatment usually lasts for several sessions and aims to reduce your retina's overall need for nutrition. This will starve new blood vessels of blood, and so reduce the risk of bleeding and scarring from repeated haemorrhages.

We aim the laser at the outer part of your retina, which provides peripheral vision. This kind of treatment is called peripheral scatter photocoagulation. By destroying the outer part of your retina, your central vision is saved.

Laser treatment for proliferative retinopathy prevents severe sight loss (which would leave you partially-sighted or blind) in up to 90% of cases. In most cases, we will be able to save your central reading and driving vision. Laser treatment is more effective if you have it early.

### What about treatment for macular oedema?

In macular oedema, the macula is directly involved as its blood vessels leak a combination of fluid and exudates (fatty deposits).

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This leakage may damage your central vision. At first, your vision is only mildly affected, but it can get much worse over a few months. We use laser treatment on the areas of your retina which are thickened with fluid. There are 2 laser treatments and we often use them together.

1. **Focal macular laser**, which involves aiming the laser directly at the leaking blood vessels (known as microaneurysms).
2. **Grid macular laser**, where we apply gentle low-power laser burns to your retina in a grid pattern.

Sometimes we use a three-dimensional (3D) photographic examination called a **fluorescein angiogram** to plan this treatment.

We do not fully understand how the grid laser actually works in macular oedema treatment, but it does remove the fluid from the back of your eye and may improve your sight. This improvement seems to be caused by stimulating the cells that normally drain fluid away from the retina. Unfortunately, treatment for macular oedema is not as successful as that for proliferative retinopathy and only prevents serious sight loss in about 70% of patients.

Your sight can sometimes improve, but the main aim of this treatment is to maintain your sight as it is and prevent any further damage.

You will get the best results if your treatment starts in the early stages of the disease. It usually takes two months, but sometimes it can be up to six months before you notice any improvement in your sight.

If your sight is quickly getting worse because of macular oedema, then unfortunately it is often only possible for us to prevent the worst effects of the disease, and save some (but not all) of your central vision.

In many cases, it is the combination of new blood vessel growth and macular oedema that threatens your sight, so you may need a combination of treatments.

### What will my treatment be like?

After you have had anaesthetic eye drops, we put a contact lens in your eye. During the treatment, you will see some very bright flashes of light, but your eye will get used to them within a few minutes.

The treatment for proliferative retinopathy involves applying several hundred laser spots to your retina. Your eye (or eyes if both are treated) can ache by the end of your treatment, but you should find that mild painkillers like Paracetamol will ease the pain. Sometimes, the laser light will cause a sharp pricking feeling. This will happen where you have underlying nerves. Unfortunately, these nerves cannot be seen by the doctor who is giving laser treatment.

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If you did find the treatment painful, ask for stronger painkillers. Occasionally a local anaesthetic injection is required. The effects of both the anaesthetic drops and the laser treatment usually wear off by the next morning.

The treatment for macula oedema, on the other hand, involves up to one hundred gentle laser spots aimed very close to the centre of your vision (often within one fifth of a millimetre). This means it is very important that you stay absolutely still and follow the doctor's instructions closely during your treatment.

### Can laser treatment damage my sight?

Laser treatment can permanently damage your sight. However the risks of damage are small and vary for the two kinds of eye disease.

Because of these risks, we only use laser treatment when your sight is in danger.

The risks of your sight being damaged by laser treatment are very much smaller than the risk of you losing your sight from diabetes. But, it is important that you know about the risks of the treatment. Please ask your ophthalmologist any questions you may have before you sign the consent form.

### What are the risks of laser treatment for proliferative retinopathy?

In proliferative retinopathy, the outer part of your retina is lasered. The treatment aims to give you the minimal number of laser burns necessary to control the new blood vessels. This should mean you will not notice any side effects. However, repeated laser treatment can lead to significant loss in the outer (peripheral) field of your vision, and you may have difficulty with night vision.

After many sessions of laser treatment, you may feel like you are looking down a tunnel ("tunnel vision"), and if both your eyes are being treated, your driving can be affected. In the past, the chances of someone losing enough peripheral vision to stop them driving have been greatly exaggerated. About three in every one hundred (3%) patients who are treated may have to stop driving. At the end of their course of treatments, around one in five people notice loss of their peripheral vision in at least one of their eyes. And over half the patients notice some difficulty with their night vision.

Sometimes, you may need intensive treatment. This can mean a temporary worsening of both your macular oedema and your sight.

You may have vitreous bleeding shortly after scatter laser treatment. This bleeding can cause floaters (little "cobwebs" or specks that float about in your field of vision. They are small, dark, shadowy shapes that can look like spots, thread-like strands, or squiggly lines) and blurred vision, but they will usually clear after a few weeks.

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### What are the risks of laser treatment for macular oedema?

It would be unusual for you to suffer any sight damage after treatment for macular oedema. But, if it does happen it can be serious.

At times, you may find it difficult to keep still or you may accidentally look at the laser just as it fires. If we think the risk of this is too high, we will stop your treatment.

Other complications might include you developing scars or new vessel growth under your retina. All these things can mean that you could completely lose your central vision. The risk of you losing your vision after laser treatment for macular oedema is about one patient in every three hundred (0.3%).

You may still be able to “see” the laser grid pattern after treatment, but this usually clears after two months. In a recent national survey, just under one in ten people reported a permanent area of vision loss near to the centre of their vision.

We hope this leaflet gives you enough information to help you decide whether to go ahead with this type of laser treatment.

### Further information

Please use the space below to write down any questions to ask the doctor or nurse when you attend the hospital for your appointment. Our staff will be happy to answer them.

Other sources of useful information can be found at:

NHS Direct 0845 4647

Harrogate and District NHS Foundation Trust website [www.hdft.nhs.uk](http://www.hdft.nhs.uk)

Patient Experience helpline 01423 555499 (Monday – Friday 9.30am – 4pm). E-mail: [thepatientexperienceteam@hdft.nhs.uk](mailto:thepatientexperienceteam@hdft.nhs.uk)

If you require this information in an alternative language or format (such as Braille, audiotape or large print), please ask the staff who are looking after you.