

## Diabetic Macular Oedema

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### ***What is diabetic macular oedema?***

Diabetic eye disease is a leading cause of blindness among working age adults. It is caused by changes to the tiny blood vessels of the retina (the light sensitive layer at the back of the eye). In diabetic macular oedema, blood vessels leak fluid into the retina.

### ***How does diabetic macular oedema cause vision loss?***

Vision loss occurs when the fluid reaches the macula (the center of the retina that provides sharp vision) and builds up, causing swelling. At first, you may not notice changes to your vision. Over time, diabetic macular oedema can cause your central vision to become blurred. A healthy macula is essential for good vision.

### ***Who is at risk of diabetic macular oedema?***

All people with type 1 and type 2 diabetes are at risk of diabetic macular oedema.

You are at greater risk if you:

- Have had diabetes for a long time – about one in three people living with diabetes for 20 years or more will develop diabetic macular oedema
- Have poorly controlled blood sugars

- Have high blood pressure
- Have high cholesterol levels
- Smoking
- Are pregnant

Large studies have shown that people who have well-controlled blood sugar, blood pressure and cholesterol levels, and do not smoke are less likely to develop diabetic macular oedema.

### ***How to reduce the risks of diabetic macula oedema***

To reduce the risk of diabetic macular oedema, it is important not to smoke and to ensure that your blood sugar, blood pressure, and cholesterol levels are well controlled. This can be achieved by regular visits to your diabetes nurse, general practitioner or hospital doctor.

### ***How is diabetic macular oedema detected?***

Diabetic macula oedema may be detected during your annual eye screening visits, which are offered to all patients with diabetes. Digital photographs of your retina may show signs of early diabetic macular oedema. You may not notice any changes in your vision at this stage.

If diabetic macular oedema is detected, you will be referred to the medical retina specialist for further assessment.

### ***What happens when I attend the medical retina clinic?***

You will have a comprehensive eye examination that includes:

- Visual acuity test: A sight test that measures how well you see at different distances
- Eye pressure test: A test that measures the pressure of your eyes – numbing drops may be used as part of this test
- Dilated eye examination: Drops are placed in your eyes to dilate (widen) your pupils so that the back of your eyes can be examined

You may also undergo tests such as a:

- Fluorescein angiography, a diagnostic test which involves the injection of fluorescein (yellow) dye into your bloodstream via a vein in your hand or arm, followed by a series of retinal photographs taken over several minutes. The test gives your doctor more information about the condition of your retina and this helps decide which treatment is most appropriate.
- Optical coherence tomography (OCT) measures the amount of retinal swelling (macular oedema) which, like fluorescein angiography, helps decide which treatment is most appropriate. OCT is also used to monitor your retina over time and to show how effective treatment may have been. It is effectively 'optical ultrasound', a non-invasive test, using reflections from within your retina to provide a cross-sectional picture of the retina.

### ***How is diabetic macular oedema treated?***

In the early stages of diabetic macular oedema, no treatment is needed.

If treatment is required, the treatments for diabetic macular oedema are:

1. Laser therapy
2. Injection therapy

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## ***What is laser therapy?***

A laser is used to produce small burns on areas of leaking blood vessels in the macula. Usually, laser burns are applied over several sessions. The goal of laser therapy is to reduce the amount of fluid in the macula. Several sessions may be required to achieve this. The full effects of laser therapy only occur after several months. This is why you may be asked to return to clinic three or four months after laser therapy.

Studies have shown that laser therapy reduces the risk of visual loss by 50%. The aim of laser therapy is to stabilise your vision. Improvement in vision only happens in a small number of cases.

## ***What happens during laser therapy?***

Laser therapy takes place in the outpatient medical retina clinic. You will be given eye drops to widen your pupils and numb your eye. The lights in the room will be dim. You will sit facing the laser machine and the doctor will place a contact lens on your eye. This will allow the doctor to see into the back of your eye and prevent you from blinking. During laser therapy, you will see flashes of light. You may feel a stinging sensation, which can be uncomfortable.

After laser therapy, your vision will be a little blurred for the rest of the day. You may wish to bring a pair of sunglasses with you as your eyes will be sensitive to bright lights for a few hours after treatment.

## ***What are the side effects of laser therapy?***

You may experience temporary worsening of vision on the day of laser therapy. This is caused by the bright flashing lights from the laser treatment. The vision usually recovers by the next day. Very rarely, you may develop blind spots in your vision or significant loss of central vision which may be permanent. This is

less common with the development of more advanced lasers. Laser treatment helps to stop your vision from getting worse – it does not usually improve vision. Sometimes, laser therapy does not work and your vision can still get worse despite treatment.

### ***What is injection therapy?***

This treatment involves the injection of medication into the eye. The drug works by reducing fluid leakage from blood vessels around the macula. This in turn reduces swelling of the macula. Studies have shown that this treatment is effective in preventing visual loss and can improve vision in some patients. A course of injections is required to treat diabetic macular oedema. At the start of treatment, usually one injection per month is needed. It is important to attend all appointments while receiving injection therapy. This treatment will not work if you do not have the injection at a regular interval. The length of time between injections, and how long you will need to stay on injection therapy will depend on how you respond to the treatment.

### ***Can I have injection therapy?***

Not everyone with diabetic macular oedema will benefit from injection therapy. We follow guidance from updated international review articles when assessing if you will be eligible for injection therapy.

### ***What happens during injection therapy?***

This treatment takes place in a designated room for injection therapy. You will have eye drops to widen your pupil. A nurse will then place a mark above the eye undergoing treatment. You will be asked to lie down for the injection. Numbing drops will be placed on your eye. The doctor giving the injection will clean around your eye and cover the area with a transparent cover. You will usually have a clip placed between your eyelids to keep your eye open. More numbing drops will be placed in your eye at this point. You will be asked to look

up or down as we measure the area to be injected. The treatment is injected with a fine needle and takes only a few seconds. During the injection, you may feel a dull aching sensation, which can be uncomfortable. After the injection, antibiotic drops are placed on your eye. The whole procedure usually takes about 15 to 20 minutes.

After injection therapy, you will be given antibiotic drops to use as needed. You may be asked to wait for approximately 30 minutes to have your eye pressure checked or be called the next day. Your vision will be a little blurry for the rest of the day.

### ***What are the side effects of injection therapy?***

You may have redness in the area of the eye that was injected. Your eye may feel sore or gritty for one to two days. The lubricating drops can help to relieve this temporary discomfort. You may see small round floating objects in your vision. These are air bubbles from the injection, and are harmless; they will disappear after a day. Your eye pressure may increase after injection therapy. This can be treated with eye drops or tablets. These are the common side effects of injection therapy.

Serious side effects of injection therapy are uncommon. A comprehensive list can be found in the individual drug patient information leaflets. They include bleeding or inflammation in the eye, subconjunctival haemorrhage, cataract, retinal detachment, infections inside the eye, and very rarely permanent loss of vision. These happen in less than one in 1,000 people and will be discussed during your clinic appointment. There is a very small risk of strokes and heart attacks. This is why you should not have injection therapy if you have had a stroke or heart attack in the previous three months.

### ***When should I seek urgent advice?***

If your eye becomes progressively red and painful, or if your vision gets worse after injection therapy, you must seek medical help. This might indicate infection and normally occurs within the first week after the injection.