
Eye Health: Diabetic Retinopathy

Retinopathy is one of the most common and most serious diabetes-related eye complications. It's actually the leading cause of preventable blindness.

Many people with diabetes can prevent retinopathy with healthy blood glucose (blood sugar) management, maintaining an **A1C of less than 7 percent**, and working on your overall **time-in-range** goals. Although some people with diabetes may develop retinopathy regardless of blood glucose management.

Fortunately, retinopathy is usually very treatable, especially if you catch it in the earliest stages during your annual eye exam.

What is Diabetic Retinopathy?

Retinopathy is a microvascular complication of diabetes, which means it involves the small blood vessels throughout the retina in the back of each eye.

The retina tissue is highly sensitive to light and filled with millions of cells (also known as **rods and cones**). These cells send visual information to your brain through the optic nerve, giving you the ability to see.

Keeping your retinas healthy means saving your vision.

What Causes Diabetic Retinopathy?

Retinopathy is usually caused by persistently high blood glucose (blood sugar) levels. Damage to your eyes begins when glucose blocks blood vessels that go to your retina. While genetics and metabolic abnormalities can lead to retinopathy, it's less common. Maintain an optimal A1C of less than 7 percent for the best possible prevention of diabetes-related eye complications.

Symptoms of Diabetic Retinopathy

There are often no symptoms in the earliest stages of retinopathy, which is why it's so important to schedule annual eye exams.

Some people may experience symptoms including:

- Blurred vision
- Distorted vision
- Impaired colors
- Seeing floaters
- Loss of vision

Remember, you can have retinopathy even if you aren't experiencing any of these symptoms.

Your annual eye exam is the best way to detect retinopathy in the earliest stages. The sooner retinopathy is diagnosed, the better the chance of preventing it from progressing and/or treating the existing damage.

For many, it may be possible to reverse the damage of early or moderate retinopathy.

In the latest stages of retinopathy, you may develop floaters in your vision—which also increase your risk of developing other eye conditions. These are caused by blood leaking from swollen blood vessels in the retina. While the floaters might come and go, this does not mean your retinopathy has improved. Instead, it simply means the blood from that blood vessel was absorbed into the tissue of your eye.

Eventually, floaters can worsen to the point of permanent vision loss.

Stages of Diabetic Retinopathy

Retinopathy progresses over time, which is why it's so important to catch it sooner rather than later with annual eye exams. With treatment before vision loss occurs, it may be possible to prevent any vision loss completely.

There are four stages of retinopathy based on two categories of retinopathy.

Two categories of retinopathy:

- **Non-proliferative retinopathy (NPDR):**
This means there is no presence of abnormal blood vessel growth within the affected retina tissue.
- **Proliferative retinopathy (PDR):**
This means there is a presence of abnormal cell growth within the cells of the affected retina tissue.



If you are diagnosed with retinopathy, your eye doctor will define it within one of these four stages:

STAGE 1: Mild NPDR

This stage is defined by swelling of the blood vessels in small areas of the retina, also referred to as microaneurysms. This stage can be easily detected during the dilated portion of your annual eye exam.

STAGE 2: Moderate NPDR

This stage includes the characteristics of stage one along with more swelling and actual distortion of the blood vessels in your retina. The blood vessels in your retina are also struggling in this stage to carry fresh blood which are essential for keeping the retina healthy. It is not uncommon for people at this stage of NPDR to also develop diabetic macular edema, which is a different type of retinopathy.

STAGE 3: Severe NPDR

At this stage, the retina is so deprived of healthy blood flow because a significant portion of the blood vessels have been damaged. The other troubling aspect of this stage is when the fluid leakage releases growth factors into the retina. These growth factors falsely instruct the retina to grow new abnormal blood vessels, which can eventually lead to the most severe stage of retinopathy.

STAGE 4: PDR

Defined by the presence of abnormal blood vessel growth, this has led to growth of these abnormal vessels. These cells are not healthy and are very prone to bleeding and other fluid leakage, which will threaten your vision. Overtime, scar tissue can also develop from the repeated swelling of the cells throughout your retina. This can lead to retinal detachment or a detached retina, which is when the retina pulls away from the underlying tissue of the eye. While usually painless, it should be treated immediately, usually with surgery. If left untreated, this can lead to a permanent loss of vision.

Treating Diabetic Retinopathy

With any treatment method, it's important to also work with your diabetes health care team to improve your overall blood glucose (blood sugar) management, your A1C, and your blood pressure levels. Achieving and maintaining healthy blood glucose levels will reduce your risk of experiencing further damage to the blood vessels in your eyes.

Undergoing any type of treatment for an eye condition can seem scary and overwhelming, because the eye is a delicate and sensitive part of the body. Your eyecare team will do everything they can to help the treatments be as comfortable as possible.

Your eyecare team will recommend one of the following depending on the status of your retinopathy:

- **Injectable medications:** While an injection into the eye sounds scary, it's not as bad as you might think. It's a relatively quick and painless in-office procedure and your eyes will be numbed before receiving the injection. The injected medication stops new abnormal blood vessels from growing and helps protect you from future vision loss. This treatment will be repeated over the course of months or years, varying from person to person.
- **Laser therapy:** Usually painless, this relatively quick in-office procedure includes numbing and dilating your eyes. The focal laser treatment stops bleeding and fluid leakage from the swollen blood vessels in your eyes. The scatter laser treatment can reduce the size of abnormal vessels, helping to protect you from future vision loss.
- **Vitrectomy:** This surgical procedure is more intensive than other retinopathy treatments, and it takes place in a surgical room of a clinic or hospital under local or general anesthesia. A vitrectomy is the process of creating very small incisions in the eye to remove the gel inside the eye, including any blood and scar tissue from the affected retina. By removing this gel, blood, and scar tissue, it aims to improve and preserve your vision. While it takes a few weeks to months to fully recover from the procedure, it has a very high success rate.

Take good care of your eyes by taking good care of your diabetes with the support of your health care team including your eye doctor, diabetes care provider, and diabetes care and education specialist.