

## Diabetic Retinopathy

**Diabetic retinopathy** is a condition occurring in persons with diabetes, which causes progressive damage to the retina, the light sensitive lining at the back of the eye. It is a serious sight-threatening complication of diabetes.

Diabetes is a disease that interferes with the body's ability to use and store sugar, which can cause many health problems. Too much sugar in the blood can cause damage throughout the body, including the eyes. Over time, diabetes affects the circulatory system of the retina.

Diabetic retinopathy is the result of damage to the tiny blood vessels that nourish the retina. They leak blood and other fluids that cause swelling of retinal tissue and clouding of vision. The condition usually affects both eyes. The longer a person has diabetes, the more likely they will develop diabetic retinopathy. If left untreated, diabetic retinopathy can cause blindness.

**Symptoms** of diabetic retinopathy include:

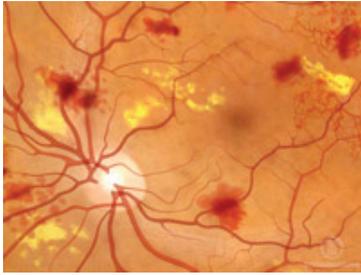
- Seeing spots or floaters in your field of vision
- Blurred vision
- Having a dark or empty spot in the center of your vision
- Difficulty seeing well at night

In patients with diabetes, prolonged periods of high blood sugar can lead to the accumulation of fluid in the lens inside the eye that controls eye focusing. This changes the curvature of the lens and results in the development of symptoms of blurred vision. The blurring of distance vision as a result of lens swelling will subside once the blood sugar levels are brought under control. Better control of blood sugar levels in patients with diabetes also slows the onset and progression of diabetic retinopathy.

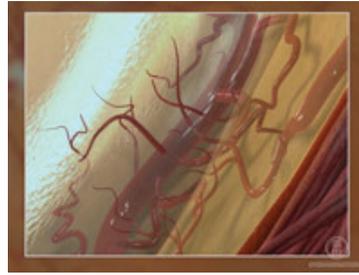
Often there are no visual symptoms in the early stages of diabetic retinopathy. That is why the American Optometric Association recommends that everyone with diabetes have a comprehensive dilated eye examination once a year. Early detection and treatment can limit the potential for significant vision loss from diabetic retinopathy.

**Treatment** of diabetic retinopathy varies depending on the extent of the disease. It may require laser surgery to seal leaking blood vessels or to discourage new leaky blood vessels from forming. Injections of medications into the eye may be needed to decrease inflammation or stop the formation of new blood vessels. In more advanced cases, a surgical procedure to remove and replace the gel-like fluid in the back of the eye, called the vitreous, may be needed. A retinal detachment, defined as a separation of the light-receiving lining in the back of the eye, resulting from diabetic retinopathy, may also require surgical repair.

If you are a diabetic, you can help prevent or slow the development of diabetic retinopathy by taking your prescribed medication, sticking to your diet, exercising regularly, controlling high blood pressure and avoiding alcohol and smoking.



**Non-proliferative diabetic retinopathy (NPDR) is the early state of the disease in which symptoms will be mild or non-existent. In NPDR, the blood vessels in the retina are weakened causing tiny bulges called microaneurysms to protrude from their walls.**



**Proliferative diabetic retinopathy (PDR) is the more advanced form of the disease. At this stage, new fragile blood vessels can begin to grow in the retina and into the vitreous, the gel-like fluid that fills the back of the eye. The new blood vessel may leak blood into the vitreous, clouding vision.**

### ***What causes diabetic retinopathy?***

Diabetic retinopathy is the result of damage caused by diabetes to the small blood vessels located in the retina. Blood vessels damaged from diabetic retinopathy can cause vision loss:

- Fluid can leak into the macula, the area of the retina which is responsible for clear central vision. Although small, the macula is the part of the retina that allows us to see colors and fine detail. The fluid causes the macula to swell, resulting in blurred vision.
- In an attempt to improve blood circulation in the retina, new blood vessels may form on its surface. These fragile, abnormal blood vessels can leak blood into the back of the eye and block vision.

Diabetic retinopathy is classified into two types:

1. **Non-proliferative diabetic retinopathy (NPDR)** is the early state of the disease in which symptoms will be mild or non-existent. In NPDR, the blood vessels in the retina are weakened causing tiny bulges called microaneurysms to protrude from their walls. The microaneurysms may leak fluid into the retina, which may lead to swelling of the macula.
2. **Proliferative diabetic retinopathy (PDR)** is the more advanced form of the disease. At this stage, circulation problems cause the retina to become oxygen deprived. As a result new fragile blood vessels can begin to grow in the retina and into the vitreous, the gel-like fluid that fills the back of the eye. The new blood vessel may leak blood into the vitreous, clouding vision. Other complications of PDR include detachment of the retina due to scar tissue formation and the development of glaucoma. Glaucoma is an eye disease defined as progressive damage to the optic nerve. In cases of proliferative diabetic retinopathy, the cause of this nerve damage is due to extremely high pressure in the eye. If left untreated, proliferative diabetic retinopathy can cause severe vision loss and even blindness.

**Risk factors** for diabetic retinopathy include:

- **Diabetes** — people with Type 1 or Type 2 diabetes are at risk for the development of diabetic retinopathy. The longer a person has diabetes, the more likely they are to develop diabetic retinopathy, particularly if the diabetes is poorly controlled.
- **Race** — Hispanic and African Americans are at greater risk for developing diabetic retinopathy.
- **Medical conditions** — persons with other medical conditions such as high blood pressure and high cholesterol are at greater risk.
- **Pregnancy** — pregnant women face a higher risk for developing diabetes and diabetic retinopathy. If gestational diabetes develops, the patient is at much higher risk of developing diabetes as they age.