

# Diabetic Retinopathy

**A**n estimated 18 million American children and adults have diabetes. Within 10 years of diagnosis, 75 percent will have some degree of diabetic retinopathy.

Diabetic retinopathy is caused by high blood sugar, which damages tiny blood vessels of the retina. In response, the body grows fragile new blood vessels (neovascularization) within the retina.

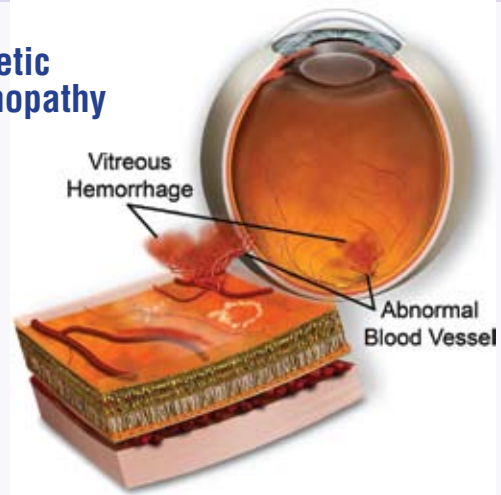
A person with diabetic retinopathy might notice symptoms only after damage is done. A doctor is usually able to detect retinal changes much sooner and can help prevent vision loss. Therefore, regular dilated eye exams are extremely important.

Symptoms of diabetic retinopathy may include blurred vision, changes in central vision, floating spots, and even sudden vision loss. The first two symptoms are caused by swelling (edema) of the macula, the part of the retina that gives us sharp central vision.

Floating spots are droplets of blood from leaky blood vessels growing into the eye's jelly-like center (vitreous body). When these vessels bleed heavily (vitreous hemorrhage), vision may become completely blocked. Diabetic retinopathy can also cause a retinal detachment; this sometimes looks like a billowy curtain.

Research to Prevent Blindness (RPB) funded investigations that led to the development of laser treatments and new compounds, which are effective for preventing *additional* vision loss. However, the best approach for saving vision is prevention: Diabetic retinopathy can be delayed and often prevented through tight blood sugar control. People with diabetes can also reduce their risk of diabetic retinopathy by maintaining healthy blood pressure.

## Diabetic Retinopathy



**Diabetic retinopathy is the leading cause of new cases of blindness among people aged 20-74, but most vision loss due to diabetic retinopathy is preventable with early detection and intervention.**

## Important Vision Saving News

Scientific research funded by Research to Prevent Blindness (RPB) has helped uncover ways people with diabetes can promote lifelong sight:

- Maintaining control of blood sugar as close to normal as possible is a cornerstone of diabetes care.
- Schedule annual dilated eye exams. Early vision loss from diabetic retinopathy may be so subtle that you don't notice, but a doctor will.
- High blood pressure increases the risk of vision loss from diabetic retinopathy.
- Be aware that kidney involvement in diabetes can be a predictor for diabetic retinopathy.

## Recent Strides by Researchers

- Studies of new treatments for halting blood vessel damage show promise.
- Recent data shows that zeaxanthin (found in green leafy vegetables) inhibits diabetes-induced retinal damage.

## Hope Through Research

**R**esearch to Prevent Blindness (RPB) mobilizes financial resources in support of eye research, making available essential laboratory space, sustaining scientific personnel and providing advanced technological equipment in its mission to preserve vision and restore sight.

### Preventing blood vessel problems

A small study of patients with advanced diabetic retinopathy has found that a drug originally developed and FDA-approved for colorectal cancer caused a rapid regression of abnormal blood vessel growth.

### New molecular targets

As researchers uncover the cellular and biochemical mechanisms that contribute to diabetic retinal damage, they are uncovering new molecular targets for treatments to modify the course of the disease. Recently, investigators found that the antioxidant lipoic acid might be useful as a pharmacological intervention to prevent and treat diabetic retinopathy. Healthy people make lipoic acid in sufficient quantities, but diabetics do not.

### Low blood sugar and diabetic eye disease

Studies are indicating that, in addition to high blood sugar, low blood sugar may be a cause of diabetic eye disease. Both central vision and macular sensitivity are affected by the metabolic stress of low blood sugar, raising the concern that repeated low blood sugar levels, over time, may lead to age-related loss of vision and retinal degeneration.

**An estimated 1 in 29 people in the U.S. general population, aged 40 and older, have some form of diabetic retinopathy and an estimated 1 in 132 have vision-threatening diabetic retinopathy.**



**Normal Vision**



**Diabetic Retinopathy**

## A Scientist's Challenge

One of the most respected scientists and physicians in the field of diabetic retinopathy has advice that is being used in eye care guidelines worldwide. According to the RPB-supported researcher: "A patient can reduce the risk of developing diabetic retinopathy and slow the progression of existing diabetic retinopathy by controlling blood sugar and blood pressure." His team of scientists has shown that people with higher blood sugar and blood pressure levels are more likely than people with lower levels to develop retinopathy after 10 years. His message to patients: Work hand-in-hand with a health care provider.

### Invest in Your Vision

You can join RPB in supporting critical research in the fight against vision loss by sending your tax-deductible donation to the address shown below or online at [www.rpbusa.org](http://www.rpbusa.org). You may also call RPB at (800) 621-0026. All donations, up to a million dollars, are doubled through the Jules and Doris Stein Matching Fund. *RPB is a public 501(c)(3) foundation.*

### Keep in Mind

Patients must play an active role if they want to reduce or prevent diabetic retinopathy:

- Maintain blood sugar levels as close to normal as possible—the goal for people with diabetes is an HbA1c of under 7%.
- Control blood pressure
- See an eye doctor regularly.

