Diabetic Retinopathy

What is diabetic retinopathy?

People with diabetes can have an eye disease called diabetic retinopathy. This is when high blood sugar levels cause damage to blood vessels in the retina. These blood vessels can swell and leak. Or they can close, stopping blood from passing through. Sometimes abnormal new blood vessels grow on the retina. All of these changes can steal your vision.

Stages of diabetic eye disease

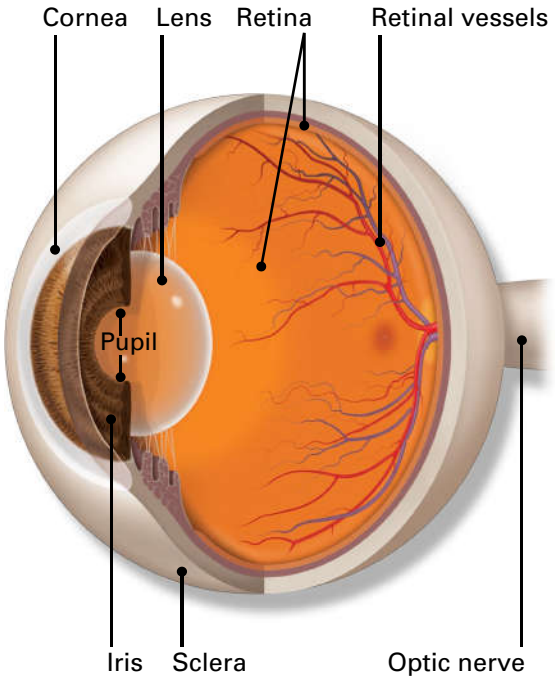
There are two main stages of diabetic eye disease.

NPDR (non-proliferative diabetic retinopathy): This is the early stage of diabetic eye disease. Many people with diabetes have it.

With NPDR, tiny blood vessels leak, making the retina swell. When the macula swells, it is called **macular edema**. This is the most common reason why people with diabetes lose their vision.

Also with NPDR, blood vessels in the retina can close off. This is called **macular ischemia**. When that happens, blood cannot reach the macula. Sometimes tiny particles called exudates can form in the retina. These can affect your vision too.

If you have NPDR, your vision will be blurry.



Eye Words to Know

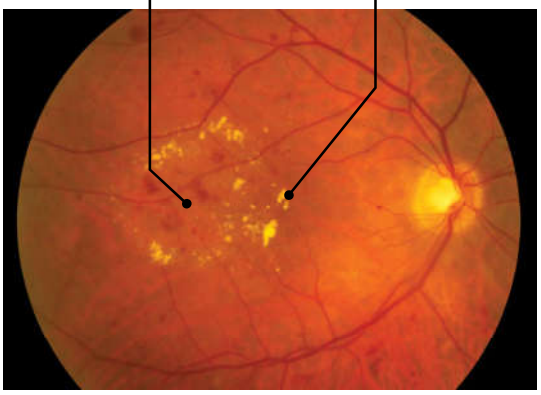
Retina: Layer of nerve cells lining the back wall inside the eye. This layer senses light and sends signals to the brain so you can see.

Macula: Small but important area in the center of the retina. You need the macula to clearly see details of objects in front of you.

Macular edema: Swelling of the macula from leaking blood vessels. Macular edema causes vision loss.

Vitreous: Jelly-like substance that fills the middle of the eye.

Floaters: Tiny clumps of cells or other material inside the vitreous. These look like small specks, strings or clouds moving in your field of vision.



With diabetic retinopathy, you may have fluid or particles in your retina, affecting your vision.

Traction retinal detachment

Macular edema is the most common cause of vision loss in diabetes.

PDR (proliferative diabetic retinopathy): PDR is the more advanced stage of diabetic eye disease. It happens when the retina starts growing new blood vessels. This is called **neovascularization**. These fragile new vessels often bleed into the vitreous. If they only bleed a little, you might see a few dark floaters. If they bleed a lot, it might block all vision.

These new blood vessels can form scar tissue. Scar tissue can cause problems with the macula or lead to a detached retina.

PDR is very serious, and can steal both your central and peripheral (side) vision.

What are diabetic retinopathy symptoms?

You can have diabetic retinopathy and not know it. This is because it often has no symptoms in its early stages. As diabetic retinopathy gets worse, you will notice symptoms such as:

- seeing an increasing number of floaters
- having blurry vision
- having vision that changes sometimes from blurry to clear
- seeing blank or dark areas in your field of vision
- having poor night vision noticing colors appear faded or washed out
- losing vision

Diabetic retinopathy symptoms usually affect both eyes.

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How is diabetic retinopathy diagnosed?

Drops will be put in your eye to dilate (widen) your pupil. This allows your ophthalmologist to look through a special lens to see the inside of your eye.

Your doctor may do **fluorescein angiography** to see what is happening with your retina. Yellow dye (called fluorescein) is injected into a vein, usually in your arm. The dye travels through your blood vessels. A special camera takes photos of the retina as the dye travels throughout its blood vessels. This shows if any blood vessels are blocked or leaking fluid. It also shows if any abnormal blood vessels are growing.

Optical coherence tomography (OCT) is another way to look closely at the retina. A machine scans the retina and provides detailed images of its thickness. This helps your doctor find and measure swelling of your macula.

How is diabetic retinopathy treated?

Your treatment is based on what your ophthalmologist sees in your eyes. Treatment options may include:

- **Medical control.** Controlling your blood sugar and blood pressure can stop vision loss. Carefully follow the diet your nutritionist has recommended. Take the medicine your diabetes doctor prescribed for you. **Sometimes, good sugar control can even bring some of your vision back.** Controlling your blood pressure keeps your eye's blood vessels healthy.

Do you have diabetes and need an exam for eyeglasses?

Changes in blood sugar levels can affect your vision. Make sure your blood sugar is under control for at least a week before an eye exam. Eyeglasses prescribed when your blood sugar levels are stable work best!

- **Medicine.** One type of medication is called "anti-VEGF" medication. This helps to reduce swelling of the macula, slowing vision loss and perhaps improving vision. This drug is given by injections (shots) in the eye. Steroid medicine is another option to reduce macular swelling. This is also given as injections in the eye. Your doctor will recommend how many medication injections you will need over time.
- **Laser surgery.** Laser surgery might be used to help seal off leaking blood vessels. This can reduce swelling of the retina. Laser surgery can also help shrink blood vessels and prevent them from growing again. Sometimes more than one treatment is needed.
- **Vitrectomy.** If you have advanced PDR, your ophthalmologist may recommend surgery called vitrectomy. Your ophthalmologist removes vitreous gel and blood from leaking vessels in the back of your eye. This allows light rays to focus properly on the retina again. Scar tissue also might be removed from the retina.

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Preventing vision loss from diabetic retinopathy

- If you have diabetes, talk with your primary care doctor about controlling your blood sugar. High blood sugar damages retinal blood vessels. That causes vision loss.
- Do you have high blood pressure or kidney problems? Ask your doctor about ways to manage and treat these problems.
- See your ophthalmologist regularly for dilated eye exams. Diabetic retinopathy may be found before you even notice any vision problems.
- If you notice vision changes in one or both eyes, call your ophthalmologist right away.
- Get treatment for diabetic retinopathy as soon as possible. This is the best way to prevent vision loss.

Summary

High blood sugar levels can affect your retina and macula, leading to vision loss. This is called diabetic retinopathy. In its early stages, diabetic retinopathy often has no symptoms. But as it gets worse, eye damage from diabetes leads to vision loss.

Treatment for diabetic retinopathy may include medication, eye injections and surgery.

See your ophthalmologist regularly to check for damage from diabetic retinopathy.

Watch a diabetic retinopathy video from the American Academy of Ophthalmology's EyeSmart program at **aao.org/diabetic-retinopathy-link**.

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