



# ALBERTA RETINA CONSULTANTS

Excellence in patient care, research and teaching

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## Research

AMD  
Diabetes  
Vascular Occlusion  
Retinal Surgery  
Hereditary Eye Disease

University of Alberta  
Clinical & Surgical  
Teaching

## Tele-ophthalmology

Advanced Medical &  
Surgical Management of  
Retinal and Vitreous  
Disease

## What is diabetic retinopathy?

Diabetic retinopathy is a complication of diabetes and a leading cause of blindness. It occurs when diabetes damages the tiny blood vessels inside the retina, the light-sensitive tissue at the back of the eye. A healthy retina is necessary for good vision. If you have diabetic retinopathy, at first you may notice no changes to your vision. But over time, diabetic retinopathy can get worse and cause vision loss. Diabetic retinopathy usually affects both eyes.

## What are the stages of diabetic retinopathy?

**Mild Nonproliferative Retinopathy.** At this earliest stage, microaneurysms occur. They are small areas of balloon-like swelling in the retina's tiny blood vessels.

**Moderate Nonproliferative Retinopathy.** As the disease progresses, some blood vessels that nourish the retina are blocked.

**Severe Nonproliferative Retinopathy.** Many more blood vessels are blocked, depriving several areas of the retina with their blood supply. These areas of the retina send signals to the body to grow new blood vessels for nourishment.

**Proliferative Retinopathy.** At this advanced stage, the signals sent by the retina for nourishment trigger the growth of new blood vessels. This condition is called proliferative retinopathy. These new blood vessels are abnormal and fragile. They grow along the retina and along the surface of the clear, vitreous gel that fills the inside of the eye. By themselves, these blood vessels do not cause symptoms or vision loss. However, they have thin, fragile walls. If they leak blood, severe vision loss and even blindness can result.

## Who is at risk for diabetic retinopathy?

All people with diabetes--both type 1 and type 2--are at risk. That's why everyone with diabetes should get a comprehensive dilated eye exam at least once a year early in diabetes and more frequently as directed by their ophthalmologist. Approximately 25% of Canadians diagnosed with diabetes have some stage of diabetic retinopathy. If you have diabetic retinopathy, we may recommend treatment to help prevent worsening of your eye disease.

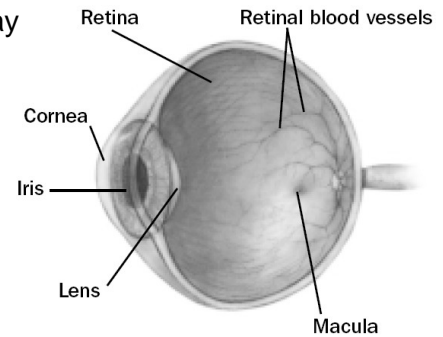
## How does diabetic retinopathy cause vision loss?

Fluid can leak into the center of the macula, the part of the eye where sharp, straight-ahead vision occurs. The fluid makes the macula swell, blurring vision. This condition is called **macular edema**. It can occur at any stage of diabetic retinopathy, although it is more likely to occur as the disease progresses. About half of the people with proliferative retinopathy also have macular edema.

Fragile, abnormal blood vessels can develop and leak blood into the center of the eye, blurring vision. This is **proliferative retinopathy** and is the fourth and most advanced stage of the disease.

## Does diabetic retinopathy have any symptoms?

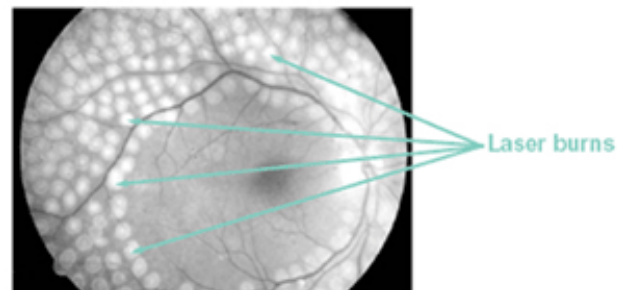
Diabetic retinopathy often has no early warning signs. **Don't wait for symptoms.** Make sure to keep your appointments and see your retina specialist as directed.



### How is a macular edema treated?

Macular edema is treated with laser. The procedure is called focal laser treatment. We find the small leaky blood vessels and spot weld them so they no longer leak. The procedure is not painful, although the laser light can be bright. It takes only a few minutes to do the procedure although it takes a few months for the eye to stop leaking. Often more than one treatment is needed to stop the leakage. New areas of leakage can develop or treated areas may start leaking again so continued follow up with your retina specialist is necessary. Focal laser treatment helps to preserve vision. In fact, focal laser treatment reduces the risk of vision loss by 50 percent. It can also improve the vision in a certain percent of people. In some severe cases injection of a steroid medication into your eye, and/or surgery may be required to lessen the edema. Proliferative retinopathy is treated with peripheral laser. This procedure is

called scatter laser treatment (or pan retinal photocoagulation (PRP). Scatter laser treatment helps to shrink the abnormal blood vessels. As proliferative retinopathy can occur in many places, scatter laser requires more laser than focal laser. In fact, we may have to put in 1,000 to 2,000 laser spots in the areas of the retina away from the macula, causing the abnormal blood vessels to shrink. Because a high number of laser spots are



Scatter laser treatment

necessary, three or more sessions usually are required to complete treatment. Although scatter laser may cause some loss of your side vision, color vision or night vision, it can also save the rest of your sight. Scatter laser treatment works better before the fragile, new blood vessels have started to bleed. That is why it is important to have regular, comprehensive dilated eye exams. Even if bleeding has started, scatter laser treatment may still be possible, depending on the amount of bleeding. If the bleeding is severe, you may need a surgical procedure called a vitrectomy. During a vitrectomy, blood is removed from the vitreous of your eye.

### What happens during laser treatment?

Both focal and scatter laser treatment are performed at our office or at the Royal Alexandra eye clinic. Before the laser, we will dilate your pupil and apply drops to freeze the front of the eye. The area behind your eye also may be frozen to prevent discomfort. The lights in the office will be dim. As you sit facing the laser machine, we will hold a special lens to your eye to prevent the lid from closing. During the procedure, you may see flashes of light. These flashes eventually may create a stinging sensation that can be uncomfortable. You will need someone to drive you home after laser. Because your pupil will remain dilated for a few hours, you should bring a pair of sunglasses. For the rest of the day, your vision will probably be a little blurry. If your eye has increasing pain or you develop nausea or vomiting, you should call our office.

### Are scatter laser treatment and vitrectomy effective in treating proliferative retinopathy?

Yes. Both treatments are very effective in reducing vision loss. People with proliferative retinopathy have less than a five percent chance of becoming blind within five years when they get timely and appropriate treatment. Although both treatments have high success rates, they do **not** cure diabetic retinopathy. Once you have proliferative retinopathy, you always will be at risk for new bleeding. You may need treatment more than once to protect your sight. For more detailed information see [www.alberta-retina.com](http://www.alberta-retina.com)