



# Diabetes and the Eye

## Diabetes can affect your sight

### What is diabetes?

When you have diabetes, your body can't properly control the levels of sugar (glucose) in your blood. If your body doesn't produce enough of a hormone called insulin you have type 1 diabetes. If your body's tissues don't respond properly to the action of insulin (insulin resistance) you have type 2 diabetes.

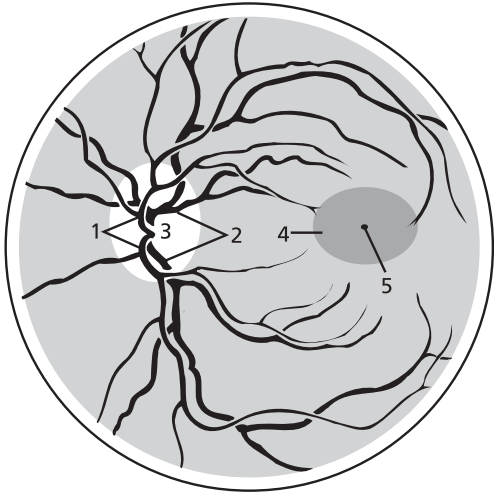
Over 1.5 million Canadians are believed to have diabetes, and about half of those don't know they have it. Diabetes can affect many parts of your body, including your blood vessels, nerves, kidneys, heart, and eyes. It blinds 400 Canadians every year.

### How does diabetes affect the eyes?

If your blood glucose levels are too high or they are not well controlled, you may have blurred vision and your eyeglass prescription may change. It may also be hard for your eyes to focus properly. Controlling your blood glucose levels usually fixes this. As well, diabetes can lead to other eye problems, such as **cataracts**, double vision, or **glaucoma**.

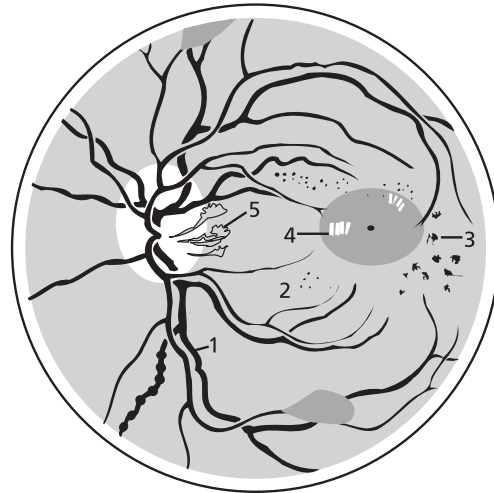
An important cause of vision problems in people with diabetes is "diabetic retinopathy." This is a change in the tiny blood vessels that feed the **retina**. In the early stages, the blood vessels weaken and leak fluid or tiny amounts of blood. This causes swelling of the retina. This is called "nonproliferative" or

## Normal retina and optic nerve



- 1 Small branch of an artery
- 2 Tiny blood vessels
- 3 Start of the optic nerve
- 4 Back of the eye
- 5 Centre of the retina

## Diabetic retinopathy



- 1 Blood vessels dilate and weaken
- 2 Blood vessels leak tiny amounts of blood
- 3 Heavy bleeding
- 4 Fat and cholesterol deposits
- 5 New abnormal blood vessels form

“background” retinopathy. At this stage you may have normal vision or you may notice that your vision has blurred or changed. About 1 in 4 people with diabetes have some nonproliferative retinopathy.

When retinopathy is more advanced, the blood vessels become blocked or closed and parts of the retina die. New, abnormal blood vessels grow to replace the old ones. This is called “proliferative” retinopathy, and it affects about 1 in 20 people with diabetes. The new vessels are fragile and often bleed into the eye, blocking your vision. Then scar tissue forms, and it shrinks and tears the retina and makes it bleed or even detach from the back of your eye. This can lead to severe visual loss or blindness. Fortunately, this happens in only a small percentage of people with diabetes.

The longer you have diabetes, the higher your risk of having diabetic retinopathy. Most people who have had diabetes for more than 20 years have some form of retinopathy.

## How is diabetic retinopathy diagnosed?

If diabetic retinopathy is diagnosed early enough, your doctor may be able to prevent or delay severe vision loss. People with diabetes should have an annual eye exam by an **ophthalmologist**. The ophthalmologist may take a special photograph of your retina called a "fluorescein angiogram."

## How is diabetic retinopathy treated?

Laser treatment seals leaky blood vessels and stops the growth of new ones. There are advantages and few disadvantages to laser treatment. Your ophthalmologist will discuss the benefits and risks of laser treatment with you. In cases of more advanced retinopathy, the benefits usually outweigh the risks.

If retinopathy is not treated (or sometimes even if it is treated), some people bleed heavily into their eye. To treat this, the ophthalmologist has to do a delicate operation called a vitrectomy to remove the blood and scar tissue. You may also need surgery if your retina detaches from the back of your eye.

## Can diabetic retinopathy be prevented?

Research has shown that controlling blood glucose and blood pressure levels can delay the development of retinopathy or slow its progression in some people. People with diabetes should work closely with their health care team to control their diabetes.

Research into diabetes and diabetic retinopathy is continuing, so we can hope for prevention and better treatment in the future.

## Glossary

**Cataract:** A clouding of the lens. Seeing through cataracts is like looking through a dirty window.

**Glaucoma:** A serious and relatively common eye disease caused by increased pressure in the eye that damages the optic nerve. Side (peripheral) vision is affected first.

**Ophthalmologist:** A medically trained eye doctor and surgeon.

**Retina:** Thin, light-sensitive tissue that covers the back of the eye and works like film in a camera to register the images we see.