See The Possibilities

The Big Five Serious Eye Conditions

Glaucoma

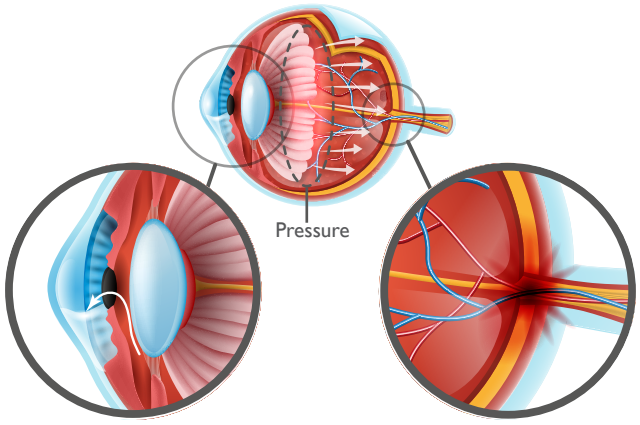
An eye disease caused by damaged optic nerves, glaucoma can lead to blind spots in a person's field of vision and even complete vision loss.

What is glaucoma?

Glaucoma is a disease of the optic nerve. The optic nerve transmits the images you see from the eye to the brain and is made up of many nerve fibres (like an electric cable with its numerous wires). Glaucoma damages nerve fibres, which can cause blind spots and vision loss.

Glaucoma is usually related to the pressure inside the eye, known as the intraocular pressure (IOP). When the aqueous humour (a clear liquid that normally flows in and out of the eye) cannot drain properly, pressure builds up in the eye. The resulting increase in IOP can damage the optic nerve and lead to vision loss.

Glaucoma



Drainage canal is blocked. Too much fluid stays in the eye. This increases pressure.

High pressure damages optic nerve.

Normal vision

Vision loss due to glaucoma

Forms of glaucoma

Open-Angle Glaucoma

The most common form of glaucoma is primary open-angle glaucoma. In this type of glaucoma, the aqueous fluid (thin, watery liquid in your eye) is blocked from flowing out of the eye at a normal rate through the tiny drainage system.

Most people who develop primary open-angle glaucoma notice no symptoms until their vision is impaired.

Ocular hypertension (or high internal eye pressure) is often a precursor to actual open-angle glaucoma. When ocular pressure is above normal, the risk of developing glaucoma increases.

Angle-Closure Glaucoma

In angle-closure glaucoma, the iris (the coloured part of the eye) may completely close off the drainage pathway, abruptly blocking the flow of aqueous fluid and leading to a sudden increase in intraocular pressure (IOP). This condition is considered an emergency because optic nerve damage and vision loss can occur within hours of the problem.

Symptoms can include nausea, vomiting, seeing halos around lights, and eye pain.

Normal-Tension Glaucoma

Even some people with "normal" IOP can experience vision loss from glaucoma. This condition is called normal-tension glaucoma.

In this type of glaucoma, the optic nerve is damaged even though the IOP is considered normal. Normal-tension glaucoma is not well understood, but lowering IOP has been shown to slow progression of this form of glaucoma.

Childhood Glaucoma

Childhood glaucoma, which starts in infancy, childhood, or adolescence, is rare. Like primary open-angle glaucoma, there are few, if any, symptoms in the early stage. Blindness can result if it is left untreated. Like most types of glaucoma, childhood glaucoma may run in families.

What are the risk factors for developing glaucoma?

If you have elevated intraocular pressure (IOP), some of the risk factors that will affect whether you will develop glaucoma include:

- Your level of IOP
- Family history of glaucoma
- Your corneal thickness
- Certain optic nerve conditions
- If you are of a particular ethnic background (e.g., African American or East Asian)
- Advanced age

If your risk is high, treatment to lower your IOP to prevent future damage is recommended.

How is glaucoma diagnosed?

Since glaucoma has no noticeable symptoms, it is a difficult disease to detect without regular, complete eye exams. Ongoing monitoring is needed to watch for changes. During a glaucoma evaluation, you may have the following tests:

- Tonometry to test eye pressure
- Gonioscopy to determine eye drainage angles
- Ophthalmoscopy to assess optic nerve appearance
- Visual field test to assess peripheral vision
- Optical coherence tomography (OCT) to assess the thickness of the retina and optic nerve

How is glaucoma treated?

Glaucoma is a chronic disease. While there is no cure for glaucoma, it can often be controlled with proper management.

The goal of glaucoma treatment is to lower your eye pressure to a "**target pressure**". This is a level of pressure that is less likely to cause further optic nerve damage. The target pressure differs from individual to individual. Your target pressure may change during your course of treatment.

Medications

You may be prescribed a medication to lower your eye pressure when the risk of vision loss is high enough to justify intervention.

Treatment often consists of eye drops, and there are several different medications available for the treatment of glaucoma. These medications work to lower eye pressure by decreasing the production of eye fluid, increasing the outflow of fluid from the eye, or both.

Laser Treatments

Laser treatments may also be used to enhance the drainage of fluid from the eye. They include:

- **Selective laser trabeculoplasty (SLT):** A laser procedure to open the drainage holes inside the eye and allow fluid to drain better. This can lower the pressure in your eye and help prevent damage to the optic nerve and loss of vision.
- **Laser peripheral iridotomy:** A laser is used to create an opening in the iris (the coloured part of the eye) so that fluid can enter the angle of the eye more easily. It is performed for patients with narrow angles, or angles that look like they might be prone to closure. A special contact lens is put on your eye to help direct the laser's high energy beam of light at the iris. This laser makes one or two holes in the iris.

Surgery

For eyes in which drops and laser fail to stop the progression of glaucoma, surgery may be recommended to create a new passage for aqueous fluid to leave the eye. These surgical procedures include:

- **Trabeculectomy:** A procedure where a flap is created in the wall of the eye to allow controlled leakage of fluid into the tissues (conjunctiva) that surround the eye.
- **Seton:** Implanting a drainage reservoir behind the eye and connecting it to the angle drainage structures with a tube that is buried in the eye wall. Fluid then drains to the reservoir, where it is absorbed.
- **Minimally invasive glaucoma surgery (MIG):** This procedure involves inserting tiny devices into the drainage apparatus in the angle to bypass the obstruction and allow the aqueous fluid to drain more readily. There are several devices on the market now, and more are likely to be released in the near future.

About the Canadian Ophthalmological Society

The Canadian Ophthalmological Society (COS) is a national, recognized authority on eye and vision care in Canada. As eye physicians and surgeons, we are dedicated to providing all Canadians with optimal medical and surgical eye care.

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A resource for the Canadian public on the topics of vision health, serious eye diseases, and what COS is doing to promote eye health for everyone.

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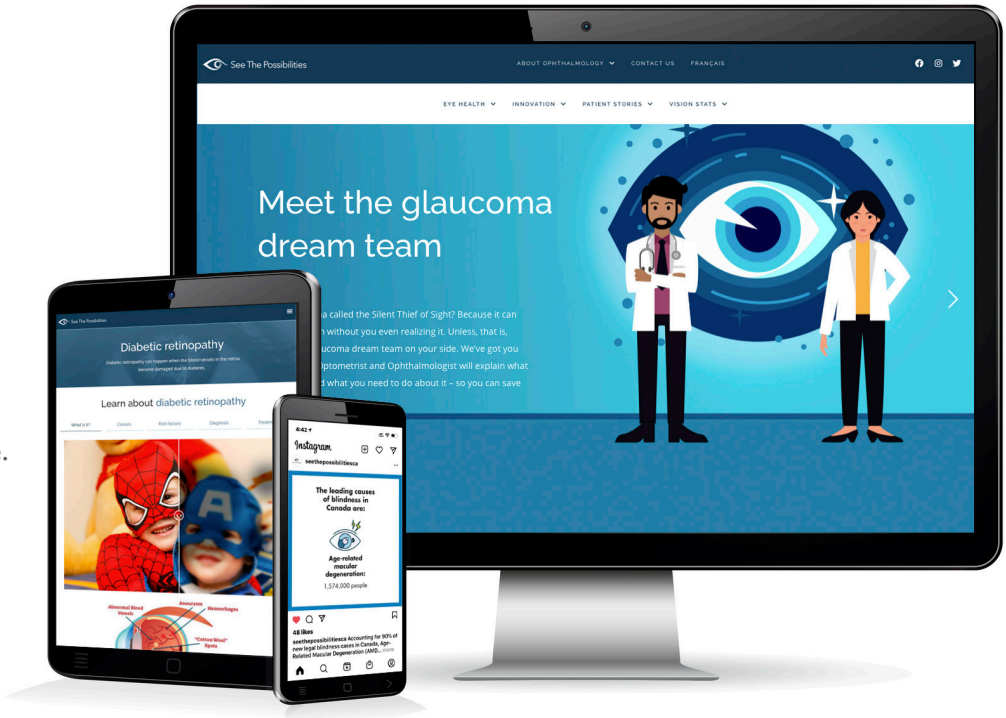

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