

# Glaucoma

**Glaucoma is one of the leading causes of blindness in the world. It accounts for 5.1 million of the estimated 38 million blind in the world and is the leading cause of irreversible blindness worldwide. Glaucoma accounts for 40% of blindness in Singapore.**

## What is Glaucoma?

Glaucoma is a group of conditions that eventually leads to diminished vision. Known as the 'silent thief of sight', glaucoma can damage your vision so slowly that you do not notice the gradual loss until the disease is in its advanced state.

As the number of elderly in the world rapidly increases, glaucoma morbidity will rise, causing increased health care costs and economic burden. With almost 70 million cases of glaucoma worldwide, glaucoma will be the most common cause of irreversible blindness in the world.

Glaucoma is not curable, but blindness is preventable if glaucoma is diagnosed and treated early enough. While there are usually no warning signs, regular eye tests will detect the onset of the disease.

## Causes

Glaucoma is usually caused by fluid pressure in the eyeball that is too high for the optic nerve to tolerate. The optic nerve carries visual impulses from your eye to the brain. This pressure build-up occurs because of an imbalance between the production and drainage of fluid within the eyeball.

There are different types of glaucoma.

### Primary open-angle glaucoma

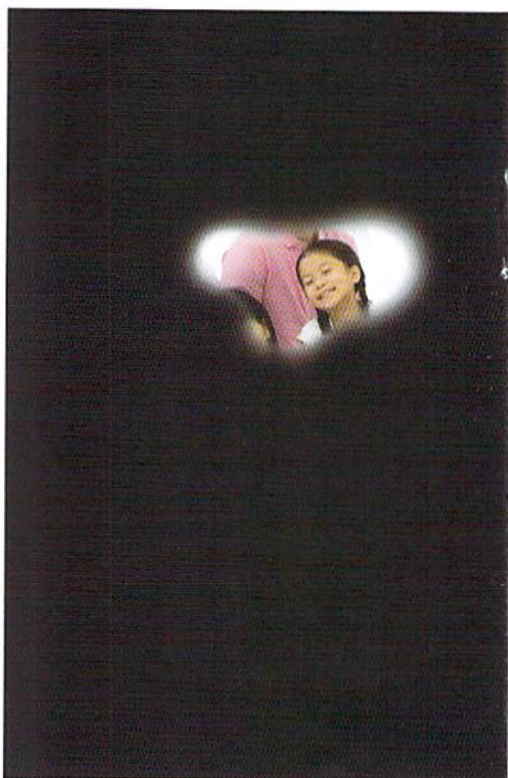
accounts for about half the cases. It affects the elderly and the middle-aged. This type of glaucoma progresses slowly and painlessly, so you may not notice that your vision is deteriorating. Peripheral and night vision will be affected before your central reading vision.

■ Glaucoma is the 'silent thief of sight', 90% of people suffering from the condition are unaware of it. Glaucoma has a strong genetic basis and family history is known to be a risk factor.

If you have a family member with glaucoma, we advise you to have your eyes checked.



Normal vision.



Impaired vision from glaucoma.

In Singapore, approximately 3% of people over the age of 50 have glaucoma. This percentage increases with age and is almost 10% for those over the age of 70. Closed-angle glaucoma accounts for about half this figure.\*

Worldwide, over 90% of people suffering from glaucoma are unaware of it at the time of diagnosis as it can be largely asymptomatic; hence the name, 'silent thief of sight'.

\*Based on a 2009 study by the Singapore Eye Research Institute

### **Acute angle-closure glaucoma**

affects predominantly the elderly and middle-aged Chinese women. The onset of this form of glaucoma is sudden, with fluid pressure rising rapidly and drastically in the eye. This results in eye pain, redness, headache and nausea. Accompanying symptoms include blurred vision and visions of coloured rings around lights.

### **Chronic angle-closure glaucoma**

progresses gradually and often goes unnoticed for a long time. It is caused by the progressive blockage of drainage channels in the eyeball resulting in the slow and prolonged rise in pressure.

**Secondary glaucoma** are commonly caused by the inflammation within the eyeball or when a cataract becomes advanced and swollen. Tumours, injuries and surgery may also cause secondary glaucoma.

### **Symptoms**

As the disease can develop slowly, you may not be aware of the gradual loss of sight until very late in the disease when your vision is seriously affected.

Symptoms of primary open-angle glaucoma include :

- Gradual loss of peripheral vision, usually in both eyes
- Tunnel vision

Symptoms of acute angle-closure glaucoma include :

- Severe eye pain
- Nausea and vomiting (accompanying the severe eye pain)
- Sudden onset of visual disturbance, often in low light
- Blurred vision
- Halos around lights
- Reddening of the eye



### **Risk Factors**

- Age. Your risk increases when you are over 60 years old.
- Chronic diseases. You are at increased risk if you have diabetes or high blood pressure
- Ethnicity. Asians are more susceptible to angle-closure glaucoma than Caucasians
- Eye injuries
- Family history
- Use of corticosteroids
- Inherently high pressure inside the eye
- Refractive error (short-sightedness or myopia is a risk factor for open-angle glaucoma as long-sightedness or hyperopia is for closed-angle glaucoma).

### **Prevention**

Most risk factors of glaucoma cannot be prevented. However, you should always maintain good eye health.



- You should also have regular eye examinations if you are over the age of 20 and have a family history of glaucoma.
- If you are over 60 years old, you should have regular eye exams regardless of family history.

Early diagnosis and treatment can minimise or prevent damage to your optic nerve and limit vision loss. Left untreated, glaucoma may lead to total blindness.

**Open-angle glaucoma** cannot be prevented but if diagnosed and treated early, it is possible to prevent visual damage and blindness.

**Closed-angle glaucoma**, however, may be potentially preventable. In the early stages of the disease (when the eye has a closed-angle but has not developed glaucoma yet), a laser procedure called laser iridotomy offers a potential way of preventing blindness caused by closed-angle glaucoma.

Laser iridotomy involves using laser energy to create a hole in the iris (the brown part of the eye), causing the angle to become 'wider'. This treatment is potentially a low-risk, once-only treatment to prevent closed-angle glaucoma.

## Treatment

Glaucoma cannot be cured, but in most cases it can be successfully controlled. Treatment depends on the type of glaucoma you are diagnosed with.

They include :

- **Eye drops**
- **Oral medications**
- **Laser surgery**
- **Filtering surgery.** If eye drops and laser surgery are not effective in controlling the pressure in your eye, filtering surgery is an alternative option. During the procedure, the doctor will create an opening in the white of the eye to remove a small piece of tissue. This will improve drainage of fluid and reduce pressure in your eye. The opening will be covered by the conjunctiva, a clear membrane, that heals over the wound.
- **Drainage implants.** This procedure involves the doctor inserting a tiny silicone tube into your eye to drain the excess fluid that is causing the pressure build-up in the eye. You will need to wear an eye patch for 24 hours and use eye drops for a few months after any surgery.