

## How Is Glaucoma Diagnosed?

The diagnosis of Glaucoma can only be made after a comprehensive eye examination including an assessment of the patient's medical and family history, measurement of the pressure of the fluids inside the eye, examination of the optic nerve through a dilated pupil, evaluation of the fluid drainage network using a gonioscope, and interpretation of a visual field test. Additional testing such as a laser optic nerve analysis with a Heidelberg Retinal Tomographer or 3-D photographs of the optic nerve tissue may also be necessary in diagnosing and managing Glaucoma patients. The pressure of the eyes should only be measured with a Goldmann tonometer and the use of drops. The non-contact or "air-puff" methods are not proven in the diagnosis and management of Glaucoma and are not used in our practice. It is very important that the evaluation of the optic nerve is done through a dilated pupil since we must see the contours of the optic nerve in 3-D to fully assess its health. The visual field is performed using a sophisticated computer analysis of the patient's side vision.



Goldmann tonometry

## How Is Glaucoma Treated?

Fortunately, with early detection and prompt intervention, Glaucoma can be successfully managed and the long term outlook is good. Most patients are treated with prescription eye drops specifically designed to lower the pressure in the eyes or enhance ocular blood flow, and thereby reduce the risk of progressive damage to the optic nerve. Sometimes, laser treatment or eye surgery is necessary when the eye drops are not sufficient in controlling the eye pressure. It is very important that we monitor the condition periodically (usually 3-4 times a year) to assess how well our prescribed treatment plan is working. It is equally important that the patient uses any medications exactly as directed and reports any potential side effects to us immediately. With early diagnosis along with good care and management, most patients can live a very normal and productive life.



Ocular blood flow analyzer



## Glaucoma

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## What Is Glaucoma?

Glaucoma is an eye disease in which the internal eye pressure rises to a point that can cause damage to the tissue of the optic nerve. The process is generally very gradual, occurring over years to decades and usually has no significant symptoms until the disease has become severe. Over 3 million people in the United States have been diagnosed with Glaucoma; however, the actual number is probably much higher as approximately 50% of people with this disease are unaware of it and go undiagnosed. Every year, more than 120,000 people lose their vision in the USA due to Glaucoma.

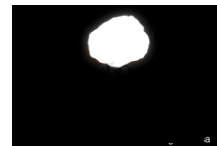
There are actually many different types of Glaucoma, but they fall into two broad classes: primary and secondary. Primary Open Angle Glaucoma accounts for over 90% of all Glaucoma and is the subject of the rest of this pamphlet. Secondary Glaucomas arise from other factors such as eye injuries, inflammation, tumors, birth defects, eye-related vascular events among others.

## What Causes Glaucoma?

The exact cause of Glaucoma is still unknown. In certain patients, the individual fibers of the optic nerve (of which there are approximately 1 million) begin to die when the pressure of the fluids of the eye is too high for that specific individual. Other factors may be involved in nerve loss, but high eye pressure is the biggest controllable risk factor. The precise pressure at which optic nerve tissue begins to die varies from patient to patient; however, the higher the pressure the more likely optic nerve decay will occur.

## How Does Glaucoma Affect Vision?

In the early stages, Glaucoma will not cause an appreciable change in vision. The patient's side vision will become gradually less sensitive and often the side vision of one eye will not be involved to the same degree or in the same location as the other eye. Central vision is almost never affected until very late in the disease. Left unchecked, the side vision will continue to deteriorate and a "tunneling" effect will occur with vision appearing as if looking through binoculars. Ultimately, the central vision can become involved and total blindness is possible.



## What are the Symptoms?

In the vast majority of glaucoma cases, there are **no** early warning signs or symptoms. Since Glaucoma is usually a very slow (years to decades), progressive process, it is virtually impossible for a patient to detect a problem or self-diagnose. On the other hand, secondary Glaucomas, which account for less than 10% of all Glaucomas, are more commonly associated with symptoms and these include: halos, pain, redness, and blurred vision.

## Who is Affected by Glaucoma?

Glaucoma can occur in anyone, but the following are the most important risk factors: age, race, diabetes, family history of Glaucoma, history of reduced blood flow and nearsightedness. Primary Open Angle Glaucoma is typically not diagnosed in patients under the age of 35, and the rate of occurrence increases with age. African-Americans are four to five times more likely to get Glaucoma as Caucasians and Diabetics are at significantly higher risk as well. A history of severe blood loss or poor circulation may also be an important risk factor as well as moderate to high degrees of nearsightedness. There is no consensus on whether High Blood Pressure increases the likelihood of Glaucoma.