

# GLAUCOMA TREATMENT OPTIONS



BLACK HILLS  
REGIONAL EYE  INSTITUTE

**Save time at your check-in and register  
online before your appointment!  
*It's as easy as 1-2-3***

1. Go online to [www.blackhillseyes.com](http://www.blackhillseyes.com)
2. Click this logo on our home page for the link to register:



3. Set-up a secure online account by completing the questionnaire. Completion of your online registration will allow you to send us a secure email message. You will now be able to view your medical record online.

***Setting up this account will allow you to send secure email messaging to submit follow-up questions, medicine changes, or post-op questions to your doctor. It's secure and convenient and available 24/7.***

***Questions about your portal account, call 605-719-3218***

Phone Number  
**605-341-2000**

Toll Free Number  
**1-800-658-3500**

All Phones Are  
Answered  
24 Hours A Day

- Any patient requiring assistance transferring will need to be accompanied by someone who can aid in that transfer.
- Drop off and pick up area available near front entrance.
- Wheelchairs also available at front entrance.

**2800 Third Street  
Rapid City, SD 57701**  
Just East of  
Rapid City Regional Hospital

# GLAUCOMA EVALUATION APPOINTMENT

**Black Hills Regional Eye Institute Doctor:  
Phone: 605-341-2000**

DOCTOR \_\_\_\_\_

CONTACT \_\_\_\_\_

EVALUATION APPOINTMENT \_\_\_\_\_

- **Surgery or laser treatment may be scheduled after this evaluation appointment.** You will not have surgery on your first appointment with the Black Hills Regional Eye Institute.
- Your evaluation appointment will be 2-3 hours long. You will be evaluated by our surgeon, our staff will perform several tests and your **eyes will be dilated.**
- Bring to your appointment: Please bring your Medicare and Insurance cards with you. Federal law requires that you must show a photo ID at your first appointment. We also require a social security number of the responsible party in order to establish an account that carries a balance such as an account that will have pending charges billed to insurance. We look forward to meeting with you at your appointment.
- Forms: Prior to your appointment, please take a moment to fill out the following forms. Bring these filled-out forms with you to your appointment.
  - Patient history questionnaire
  - List of your medications

# WELCOME



**Adam Jorgensen, MD**

Thank you for choosing Black Hills Regional Eye Institute for your clinic consultation. The additional information in this book will discuss the nature of a glaucoma, how it is treated, and some exciting technology related to glaucoma surgery. Your scheduled appointment will be for clinical evaluation only. If your surgeon determines that glaucoma surgery is medically necessary, the surgery will be scheduled and additional measurements will be taken. The time for this entire appointment will vary, but please plan on spending **2-3 hours** at the appointment. Please plan on having your eyes dilated.

Most people believe that vision is the most precious of all of the senses and that their eyes deserve the best care possible. That is what we provide for you at the Black Hills Regional Eye Institute. You are not obligated to elect options that may require additional expense. Please also feel free to find more information and videos online at **[www.blackhillseyes.com](http://www.blackhillseyes.com)**.

Please take some time to review this informational book from your doctor to introduce you to the options that will be discussed during your consultation.

- What is a glaucoma and how is it treated?
- Glaucoma surgery options
- Post-operative restrictions

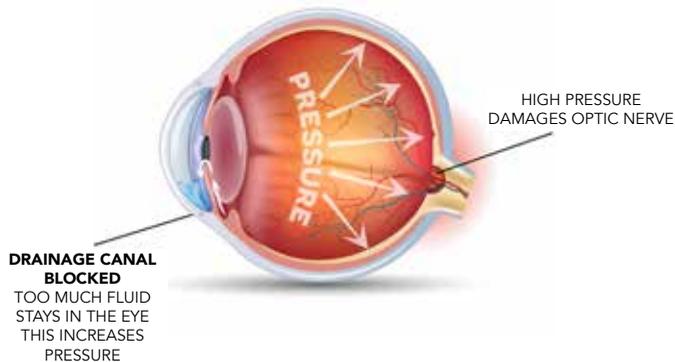
Sincerely,

*Black Hills Regional Eye Institute*

**To find out more about our surgeons please visit  
[www.blackhillseyes.com](http://www.blackhillseyes.com) and click Doctors**

# FACTS ABOUT GLAUCOMA

Glaucoma is a group of diseases that damage the eye's optic nerve and can result in vision loss and blindness. However, with early detection and treatment, you can often protect your eyes against severe vision loss. Damage to the optic nerve occurs when fluid builds up in the front part of your eye due to the eyes' drainage system becoming clogged or damaged.



That extra fluid increases the pressure in your eye. Over time, this increase in pressure may cause damage to some of the sensitive structures that receive and transmit images in the eye, including the optic nerve. The pressure damage of glaucoma causes gradual peripheral vision loss or blurring of vision and, if left untreated, can result in total, irreversible blindness.

## ABOUT THE DISEASE

- Initially, someone suffering from glaucoma may notice a gradual loss of peripheral (side) vision, before progressing to a complete loss of peripheral vision so that only a small area of central vision remains. Because there are no symptoms associated with the disease in its early stages, regular eye examinations with your ophthalmologist or optometrist are important.
- Most types of glaucoma are painless, with no feelings of discomfort.
- Glaucoma often affects one eye with more severity than the other, and our binocular visual systems are effective at compensating for defects in one eye.
- Changes to vision caused by glaucomatous damage are usually quite slow; it can be difficult to notice gradual changes.

### Normal Vision



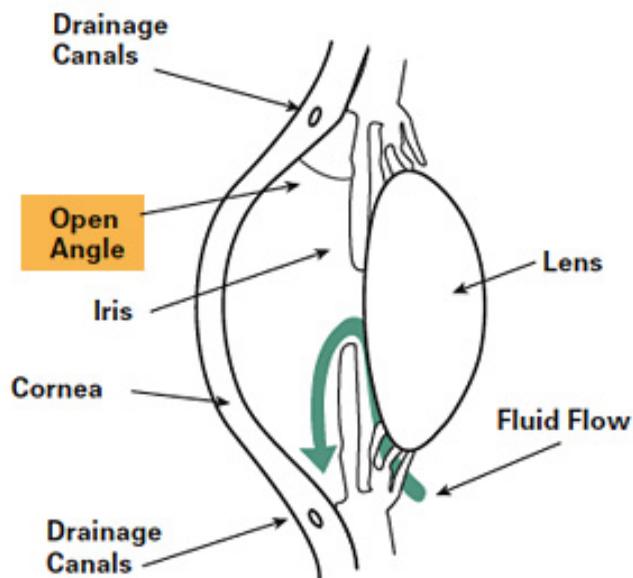
### Advanced Glaucoma



# TYPES OF GLAUCOMA

There are two major types of glaucoma.

## PRIMARY OPEN-ANGLE GLAUCOMA



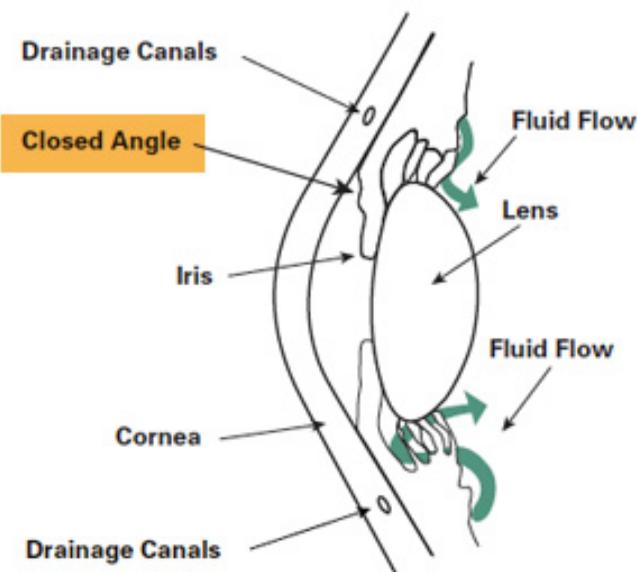
This is the most common type of glaucoma. It happens gradually, where the eye does not drain fluid as well as it should (like a clogged drain). As a result, eye pressure builds and starts to damage the optic nerve. This type of glaucoma is painless and causes no vision changes at first. As the disease progresses, blind spots develop in your peripheral (side) vision.

Most people with open-angle glaucoma do not notice any change in their vision until the damage is quite severe. This is why glaucoma is called the “silent thief of sight.” Having regular eye exams can help your ophthalmologist find this disease before you lose vision. Your ophthalmologist can tell you how often you should be examined.

Some people can have optic nerves that are sensitive to normal eye pressure. This means their risk of getting glaucoma is higher than normal. Regular eye exams are important to find early signs of damage to their optic nerve.

## ANGLE-CLOSURE GLAUCOMA

(also called “closed-angle glaucoma” or “narrow-angle glaucoma”)



This type happens when someone’s iris is very close to the drainage angle in their eye. The iris can end up blocking the drainage angle. You can think of it like a piece of paper sliding over a sink drain. When the drainage angle gets completely blocked, eye pressure rises very quickly. This is called an acute attack. It is a true eye emergency, and you should call your ophthalmologist right away or you may be at risk for severe vision loss. People at risk for angle-closure glaucoma usually show no symptoms before an attack.

Some early symptoms of an attack may include blurred vision, halos, mild headaches or eye pain. People with these symptoms should be checked by their ophthalmologist as soon as possible.

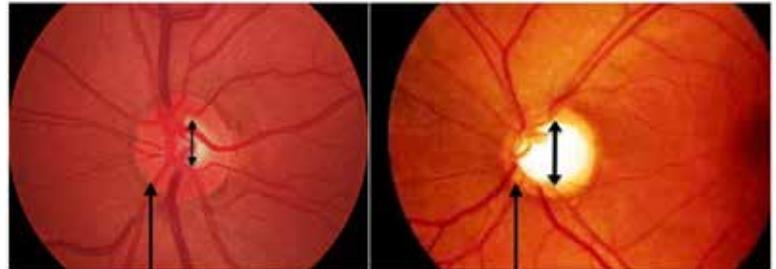
Here are the signs of an acute angle-closure glaucoma attack:

- Your vision is suddenly blurry
- You have severe eye pain
- You have a headache
- You feel sick to your stomach (nausea)
- You throw up (vomit)
- You see rainbow-colored rings or halos around lights

Many people with angle-closure glaucoma develop it slowly. This is called chronic angle-closure glaucoma. There are no symptoms at first, so they don't know they have it until the damage is severe or they have an attack. Angle-closure glaucoma can cause blindness if not treated right away.

### **NORMAL TENSION GLAUCOMA**

People with "normal tension glaucoma" have eye pressure that is within normal ranges, but show signs of glaucoma, such as blind spots in their field of vision and optic nerve damage.

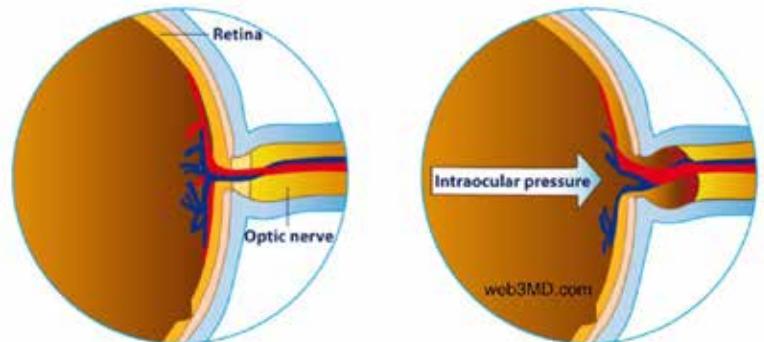


Healthy eye with a normal optic nerve head

Glaucoma eye with glaucomatous cupping of the the nerve head

### **GLAUCOMA SUSPECTS**

Some people have no signs of damage but have higher than normal eye pressure (called ocular hypertension). These patients are considered "glaucoma suspects" and have a higher risk of eventually developing glaucoma. They should be carefully monitored by an eye care professional.



## **WHO IS AT RISK FOR GLAUCOMA?**

Some people have a higher than normal risk of developing glaucoma. This includes people who:

- are over age 40
- have family members with glaucoma
- are of African, Hispanic, or Asian heritage
- have high eye pressure
- are farsighted or nearsighted
- have had an eye injury
- use long-term steroid medications
- have corneas that are thin in the center
- have thinning of the optic nerve
- have diabetes, migraines, high blood pressure, poor blood circulation or other health problems affecting the whole body



Talk with an ophthalmologist about your risk for getting glaucoma. People with more than one of these risk factors have an even higher risk of glaucoma.

# GLAUCOMA DIAGNOSIS

The only sure way to diagnose glaucoma is with a complete eye exam. A glaucoma screening that only checks eye pressure is not enough to find glaucoma.

During a glaucoma exam, your ophthalmologist will:

- measure your eye pressure
- inspect your eye's drainage angle
- examine your optic nerve for damage
- test your peripheral (side) vision
- take a picture or computer measurement of your optic nerve
- measure the thickness of your cornea

## TESTING

### TONOMETRY



Tonometry measures the pressure within your eye. During tonometry, eye drops are used to numb the eye. Then a doctor or technician uses a device called a tonometer to measure the inner pressure of the eye. A small amount of pressure is applied to the eye by a tiny device.

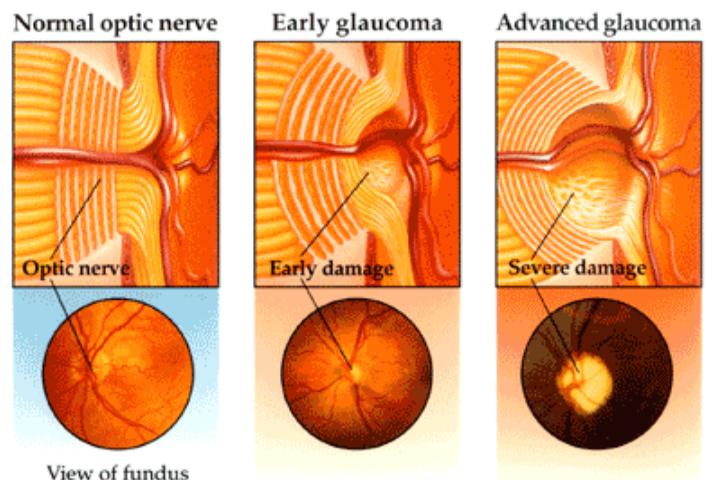
The range for normal pressure is 12-22 mm Hg ("mm Hg" refers to millimeters of mercury, a scale used to record eye pressure). Most glaucoma cases are diagnosed with pressure exceeding 20mm Hg. However, some people can have glaucoma at pressures between 12-22mm Hg. Eye pressure is unique to each person.

### DILATED EYE EXAM

This diagnostic procedure helps the doctor examine your optic nerve for glaucoma damage. Eye drops are used to dilate the pupil so that the doctor can see through your eye to examine the shape and color of the optic nerve.

The doctor will then use a small device with a light on the end to light and magnify the optic nerve. If your intraocular pressure is not within the normal range or if the optic nerve looks unusual, your doctor may ask you to have one or two more glaucoma exams: perimetry and gonioscopy

### The Progression of Glaucoma



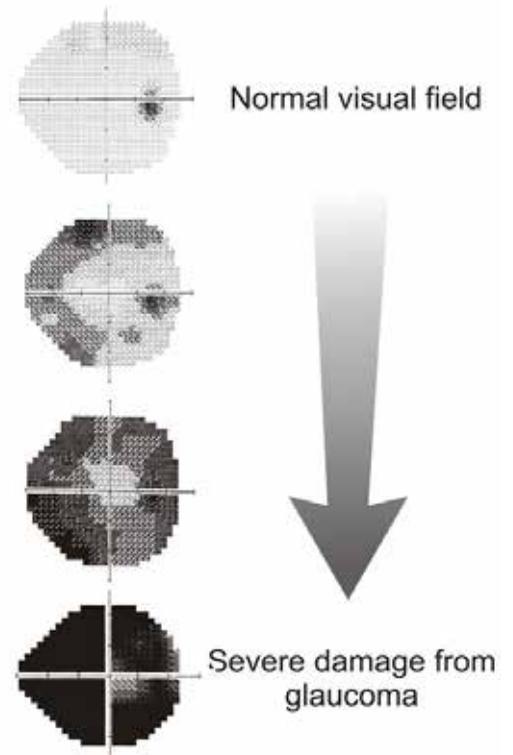
Left untreated, pressure in the eye can damage the optic nerve completely, destroying vision.

## PERIMETRY – VISUAL FIELD TESTING

Perimetry is a visual field test that produces a map of your complete field of vision. This test will help a doctor determine whether your vision has been affected by glaucoma. During this test, you will be asked to look straight ahead and then indicate when a moving light passes your peripheral (or side) vision. This helps draw a “map” of your vision.

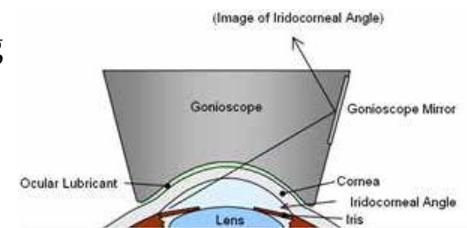
Do not be concerned if there is a delay in seeing the light as it moves in or around your blind spot. This is perfectly normal and does not necessarily mean that your field of vision is damaged. Try to relax and respond as accurately as possible during the test. Make sure to breath calmly and blink normally during the test.

Your doctor may want you to repeat the test to see if the results are the same the next time you take it. After glaucoma has been diagnosed, visual field tests are usually done one to two times a year to check for any changes in your vision.



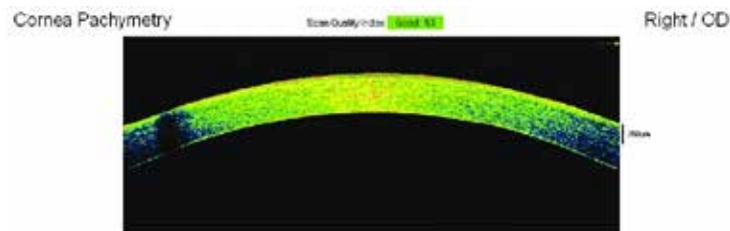
## GONIOSCOPY

This diagnostic exam helps determine whether the angle where the iris meets the cornea is open and wide or narrow and closed. During the exam, eye drops are used to numb the eye. A hand-held contact lens is gently placed on the eye. This contact lens has a mirror that shows the doctor if the angle between the iris and cornea is closed and blocked (a possible sign of angle-closure or acute glaucoma) or wide and open (a possible sign of open-angle, chronic glaucoma).



## PACHYMETRY

Pachymetry is a simple, painless test to measure the thickness of your cornea -- the clear window at the front of the eye. A probe called a pachymeter is gently placed on the front of the eye (the cornea) to measure its thickness. Pachymetry can help your diagnosis, because corneal thickness has the potential to influence eye pressure readings. With this measurement, your doctor can better understand your IOP reading and develop a treatment plan that is right for you. The procedure takes only about a minute to measure both eyes.



# TREATMENTS AVAILABLE

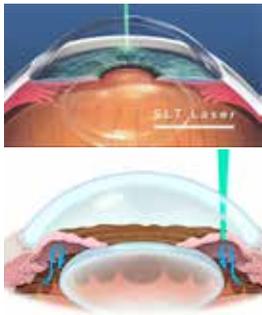
To view videos of any of the procedures listed below please visit. [www.BHREI.com](http://www.BHREI.com) under Glaucoma.

## DROPS

Glaucoma is usually controlled with eyedrop medicine. Used every day, these eye drops lower eye pressure. Some do this by reducing the amount of aqueous fluid the eye makes. Others reduce pressure by helping fluid flow better through the drainage angle.

Never change or stop taking your glaucoma medications without talking to your ophthalmologist. If you are about to run out of your medication, ask your ophthalmologist if you should have your prescription refilled.

## LASER SURGERY



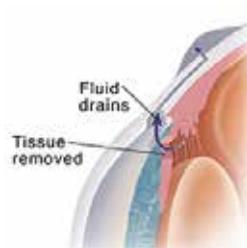
There are two main types of laser surgery to treat glaucoma. They help aqueous drain from the eye. These procedures are usually done in the ophthalmologist's office or an outpatient surgery center.

**Trabeculoplasty (SLT).** This procedure is for people who have open-angle glaucoma. The eye surgeon uses a laser to make the drainage angle work better. That way fluid flows out properly and eye pressure is reduced.

**Iridotomy.** This is for people who have angle-closure glaucoma. The ophthalmologist uses a laser to create a tiny hole in the iris. This hole helps fluid flow to the drainage angle and greatly reduces the risk of acute angle-closure glaucoma.

## OPERATING ROOM SURGERY

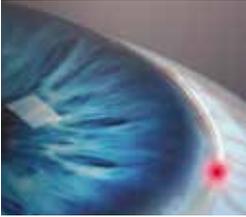
Some glaucoma surgery is done in an operating room. Most glaucoma surgeries improve the eye's natural drainage system or create a new drainage channel for the aqueous humor to leave the eye.



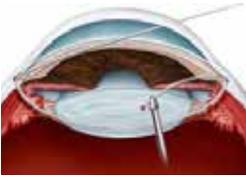
- **Trabeculectomy** is where your eye surgeon creates a tiny flap in the sclera (white of your eye). He or she will also create a bubble (like a pocket) in the conjunctiva called a filtration bleb. It is usually hidden under the upper eyelid and cannot be seen. Aqueous humor will be able to drain out of the eye through the flap and into the bleb. In the bleb, the fluid is absorbed by tissue around your eye, lowering eye pressure.



- **iStent Inject** includes two tiny implants, each made of surgical titanium. Once implanted, you will not be able to see or feel the tiny stents. To help control the increased pressure in your eye associated with glaucoma, iStent Inject creates two bypasses, or openings, between the front part of your eye and its natural drainage pathway to increase the flow of fluid.



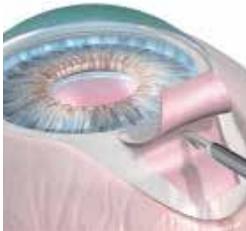
- ABiC (Ab interno Canaloplasty) Unlike other glaucoma treatments that bypass the eye's natural drainage channel, or act to mechanically change it, ABiC™ restores the eye's natural outflow pathways and does not require a permanent implant or device in your eye.



- GATT (Gonioscopy-assisted transluminal trabeculotomy) is a minimally invasive, ab interno approach to create a circumferential 360° trabeculotomy. This surgical technique lowers eye pressure by cleaving the trabecular meshwork, thereby improving aqueous outflow through the normal conventional pathway.



- Xen Gel Stent creates a small channel in the eye to drain fluid and help lower eye pressure. The XEN® Gel Stent is tiny—about the length of an eyelash—and it's placed just under the conjunctiva, which is a clear membrane that covers the white of your eye.



- Tube shunt is a flexible glaucoma drainage device that is implanted in the eye to divert aqueous humor (the fluid inside the eye) from the inside of the eye to an external reservoir. Models include the Ahmed valve, Molteno tube and the Baerveldt tube.



- Micropulse laser CPC (cyclophotocoagulation) During surgery, your doctor will point a laser at the white part of your eye (sclera). The laser goes through the sclera to the ciliary (SIL-e-air-e) body. The ciliary body is the part of the eye that makes eye fluid. The laser reduces the function of the ciliary body so that it will make less eye fluid.



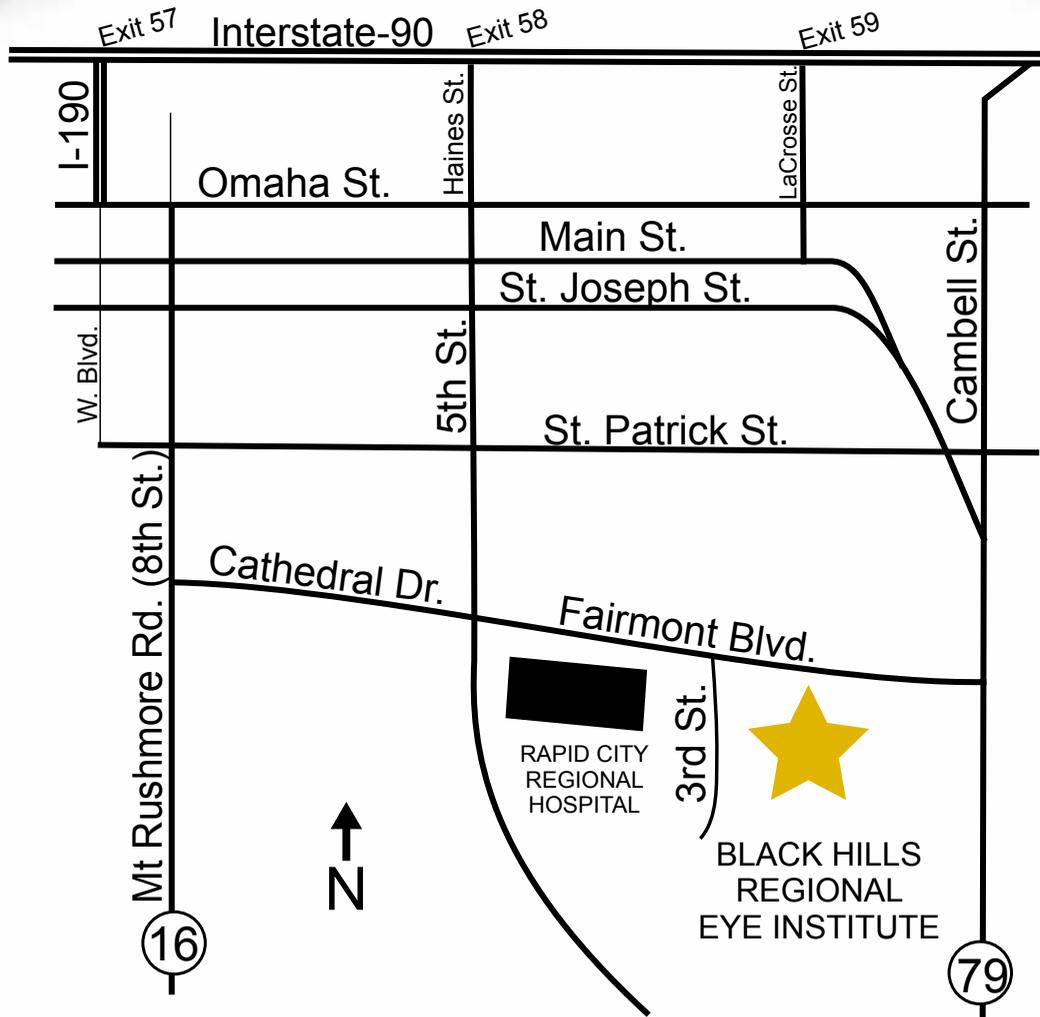
- The Hydrus™ Microstent is a highly effective device implanted to reduce intraocular pressure in patients with mild to moderate primary open-angle glaucoma. Hydrus is implanted into the eye to allow the eye's natural aqueous fluid to drain through Schlemm's canal – bypassing the normal trabecular meshwork, where the blockage causing glaucoma is likely to be located.

## YOUR ROLE IN GLAUCOMA TREATMENT?

Treating glaucoma successfully is a team effort between you and your doctor. Your ophthalmologist will prescribe your glaucoma treatment. It is up to you to follow your doctor's instructions and use your eye drops.

Once you are taking medications for glaucoma, your ophthalmologist will want to see you regularly. You can expect to visit your ophthalmologist about every 3–12 months. However, this can vary depending on your treatment needs. If your ophthalmologist determines that your glaucoma is stable, they may refer you back to your primary eye care provider for ongoing follow-up and testing. It may become necessary to follow-up with a glaucoma specialist again at a later time depending on the changes with your glaucoma.

If you have any questions about your eyes or your treatment, talk to your ophthalmologist.



*At the Black Hills Regional Eye Institute, we are dedicated to serving our community as successfully as possible.*

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