

The HRT II : preventing the vision loss associated with this disease.

The typical optic nerve damage that occurs in glaucoma is known as "cupping." As the cells making up the nerve die, due at least in part to a pressure inside the eye that is too great for that particular eye to tolerate, they die and disappear. When sufficient numbers of these cells are gone, they leave behind a small "crater" or "cup" in the nerve. A portion of the nerve then appears to have been "scooped out." So one important thing doctors look for when they examine the optic nerve is the presence and extent of the "cup," how deep and wide it is.

Glaucoma specialists can get a good idea of the amount of cupping in an optic nerve by looking at it with an instrument known as an ophthalmoscope. They can get an idea of whether the cupping is remaining stable or worsening by taking a series of photographs over time. But these methods have an important limitation. They can only suggest how big the cup is in the same way that an ordinary aerial photograph of a crater could give us only a rough idea of how deep the crater is. We can get a much better idea of the depth of the cup or crater by taking a stereoscopic photograph. This would allow us actually to measure just how much the optic nerve has been damaged.



lobular pressure), dilation and visual field exams. The HRT II utilizes a laser screening and specialized software that provide comprehensive data and analysis of the optic nerve head and adjacent nerve fiber. The HRT II gives measurements of the size, depth and shape of the optic nerve, and is especially useful in detecting small changes over time. This helps diagnose glaucoma years before symptoms become apparent to the patient. The HRT II exam takes just a few moments, is painless and non-invasive.

The Heidelberg Retina Tomograph II to supplement the traditional methods of glaucoma detection, specifically tonometry (a test for inter-



Why is Corneal Thickness Important?

Corneal thickness is important because it can mask an accurate reading of eye pressure, causing doctors to treat you for a condition that may not really exist or to treat you unnecessarily when are normal. Actual IOP may be underestimated in patients with thinner CCT, and overestimated in patients with thicker CCT. This may be important to your diagnosis; some people originally diagnosed with normal tension glaucoma may in fact be more accurately treated as having regular glaucoma; others diagnosed with ocular hypertension may be better treated as normal based on accurate CCT measurement. In light of this discovery, it is important to have your eyes checked regularly and to make sure your doctor takes your CCT into account for diagnosis.

A Thin Cornea—The Danger of Misreading

Eye Pressure Many times, patients with thin corneas (less than 555 μm) show artificially low IOP readings. This is dangerous because if your actual IOP is higher than your reading shows, you may be at risk for developing glaucoma and your doctor may not know it. Left untreated, high IOP can lead to glaucoma and vision loss. It is important that your doctor have an accurate IOP reading to diagnose your risk and decide upon a treatment plan.

A Thicker Cornea May Mean Less Reason to Worry About Glaucoma

Those patients with thicker CCT may show a higher reading of IOP than actually exists. This means their eye pressure is lower than thought, a lower IOP means that risk for developing glaucoma is lowered. However, it is still important to have regular eye exams to monitor eye pressure and stay aware of changes.

Pachymetry—A Simple Test to Determine Corneal Thickness

A pachymetry test is a simple, quick, painless test to measure the thickness of your cornea. With this measurement, your doctor can better understand your IOP reading, and develop a treatment plan that is right for your condition. The procedure takes only about a minute to measure both eyes.

GLAUCOMA MONITORING

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Common Tests for Glaucoma Regular glaucoma check-ups include two routine eye tests: tonometry and ophthalmoscopy.

The **tonometry** test measures the inner pressure of the eye. Usually drops are used to numb the eye. Then the doctor or technician will use a special device that measures the eye's pressure.

Ophthalmoscopy is used to examine the inside of the eye, especially the optic nerve. In a darkened room, the doctor will magnify your eye by using an ophthalmoscope (an instrument with a small light on the end). This helps the doctor look at the shape and color of the optic nerve. If the pressure in the eye is not in the normal range, or if the optic nerve looks unusual, then one or two special glaucoma tests will be done. These two tests are called perimetry and gonioscopy.

The **perimetry** test is also called a visual field test. 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. if either open angle or closed angle glaucoma is present.

What is glaucoma?

Glaucoma is a progressive disease of the optic nerve. It can be associated with elevated pressure inside the eye and can lead to permanent vision loss. Because there are usually no symptoms at first, glaucoma is called the “sneak thief of sight.” As the disease progresses, a person with glaucoma may notice his or her vision gradually failing

Scanning your retina to evaluate glaucoma.

For this procedure, your doctor will be using a highly innovative instrument called **OCT**. This advanced-technology instrument never touches your eye, so there’s no discomfort. It’s safe and requires only a few minutes of your time. Most importantly, OCT helps your doctor to clearly see the internal structures of your eye, so problems can be treated before they progress. The unique view that your doctor sees with **OCT** is called a direct cross-sectional image of your retina.



What is direct cross-sectional retinal imaging?

The retina is the innermost lining of the inside of your eye. It is composed of several layers, and functions like the film in a camera. The lens of the eye focuses images on your retina, much like the lens of a camera focuses images on film. These images are transmitted to your brain by the optic nerve, enabling you to see. Direct cross-sectional imaging is so named because it enables your doctor to look directly at a “cutaway” view of the layers of the retina and optic nerve, and accurately measure their characteristics. Other machines show the surface of these structures, but OCT shows your doctor what is below the surface.

Does this type of image help your doctor?

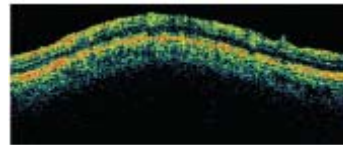
The best answer is, examining your retina without the OCT would be like trying to diagnose a broken arm without an x-ray, or a ruptured disc without an MRI

OCT: Revealing the complete picture.

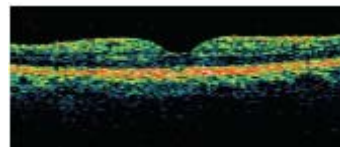
OCT offers the ultimate benefit for people living with glaucoma—the best possible care. Early detection helps your doctor to diagnose and control glaucoma before permanent damage is done. If you have glaucoma or are developing glaucoma, OCT enables your doctor to watch closely for the slightest changes and respond as needed. OCT gives your doctor high-quality, highly accurate knowledge of your eyes that is simply unavailable with any other technology. This extremely detailed understanding of your eyes can be instrumental and essential in safeguarding your vision for many years to come.

What can direct cross-sectional imaging tell my doctor about glaucoma?

OCT enables your doctor to perform three analyses for glaucoma. The tests are: OCT is the only instrument that provides these images, so it’s the ultimate tool for precise diagnosis and treatment.

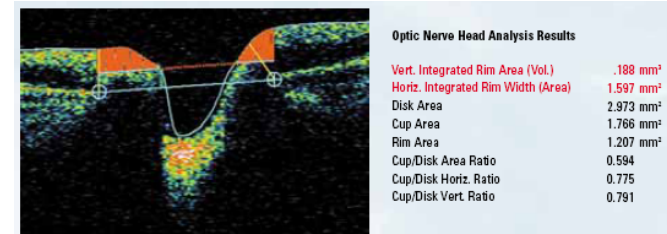


Retinal Nerve Fiber Layer (RNFL) Analysis reveals the thickness of the layer of the retina that contains nerve fibers that travel up the optic nerve. If glaucoma is present, this layer may gradually lose thickness.



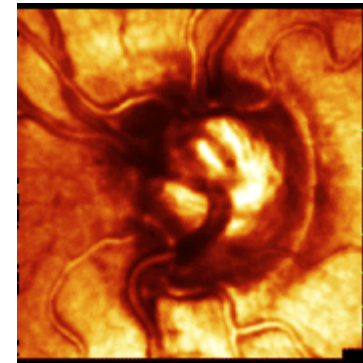
Macular Thickness Analysis examines the condition and thickness of the macula, which is the part of the retina that provides central vision. Thinning of the macula is a possible sign of glaucoma progression.

Optic Nerve Head Analysis reveals the structure of the optic nerve where it originates in the retina. With glaucoma, the “cups” in the optic nerve may enlarge.



What does direct cross-sectional retinal imaging offer that’s unique?

With OCT images of the layers of your retina and optic nerve, your doctor can see and measure delicate structures and monitor any changes. OCT is the only instrument that provides these images, so it’s the ultimate tool for precise diagnosis and treatment.



Cost of Glaucoma Monitoring.

Once your glaucoma stabilized, the standard of care requires at least one imaging study (usually an HRT test) and one computerized perimetry (field test) every 12 months. For patients where the diagnosis is uncertain, or those at special risk, an OCT test is recommended. The consultation and the field test are partially rebateable by Medicare. The cost of HRT tests are \$65.00 and an OCT is \$85.00 and these are not yet rebateable from Medicare.