For the past 15 years, Dean P. Hainsworth, MD, has been contributing to the clinical and research programs at Mason Eye Institute where he is a Professor of Ophthalmology and board-certified ophthalmologist specializing in diseases of the retina and vitreous. Dr. Hainsworth’s clinical interests include vitreoretinal surgery, macular degeneration, and diabetic retinopathy. His research activities involve vitreoretinal conditions with emphasis on Batten’s disease, diabetic macular edema, retinopathy, and uveitis, as well as developing sustained release drug devices.

Dr. Hainsworth earned his medical degree and completed his residency in ophthalmology at the University of Kentucky. In 1996 he completed a Vitreoretinal Fellowship at Duke University Eye Center. Recognized as an outstanding clinician and teacher, Dr. Hainsworth was recently selected for Best Doctors in America 2011-2012. He is the recipient of multiple teaching awards including Faculty Excellence in Teaching Award, Excellent in Medical Student Education Award and Attending of the Year Award.

To make an appointment with Dr. Hainsworth please call 573-882-1506

Diabetic Retinopathy

**WHY ARE EYE EXAMS IMPORTANT IN DIABETES?**

Diabetes is a common disease in the United States, and diabetic eye disease is the most common cause of blindness in the US. Regular eye examinations are important in diabetes because diabetic eye disease and the vision loss caused by it are completely preventable.

In diabetes, high sugar levels in the blood damage blood vessels throughout the entire body. Damage to blood vessels in the kidneys can cause kidney failure requiring dialysis. Damage to blood vessels in nerves can cause neuropathy. Your eye also has many blood vessels in it, and diabetes can also damage those blood vessels. In particular, high blood glucose levels cause damage to the blood vessels in the retina of the eye. The retina lines the back of your eye like wallpaper, and is like the film in a camera—it detects the light entering your eye and turns it into pictures for your brain to see. When the retina’s blood vessels are damaged, the retina stops working properly, and sight can be lost.

After being exposed to high sugar levels for a long time, the blood vessels in the retina develop some weak spots. These weak spots often pooh out like bubbles along the blood vessels, and these are called microaneurysms. Sometimes the microaneurysms rupture, and blood spills into the retina to form small dot hemorrhages. Your retina will eventually clear the blood away, but some debris is often left behind—these clumps of debris are called hard exudates. Altogether, these changes—microaneurysms, dot hemorrhages, and hard exudates—are called background diabetic eye disease. Most people with diabetes get these small changes in their eyes after having diabetes for 10 years or more. Background diabetic eye disease does not usually cause significant vision loss unless the swelling occurs in the very center part of the retina, called the macula. If you have swelling
Diabetic Retinopathy

Background diabetic retinopathy is a sign that your retina’s blood vessels are sick. If enough of the blood vessels rupture, the retina may not receive enough blood to keep it healthy. In this case, the retina will try to grow new blood vessels to replace the sick ones. Unfortunately, these new blood vessels usually grow in the wrong places. They are fragile, and they break easily, sometimes spilling enough blood to fill up the eye. When these new blood vessels begin to grow, it is called proliferative diabetic eye disease. Proliferative diabetic eye disease is less common than background diabetic eye disease, but is much more likely to take away some or all of your vision.

WHAT ARE THE SYMPTOMS OF PROLIFERATIVE RETINOPATHY IF BLEEDING OCCURS?

At first, you will see a few specks of blood, or spots, “floating” in your vision. If spots occur, see your eye care professional as soon as possible. Hemorrhages tend to happen more than once, often during sleep.

Sometimes, without treatment, the spots clear, and you will see better. However, bleeding can reoccur and cause severely blurred vision. You need to be examined by your eye care professional at the first sign of blurred vision, before more bleeding occurs.

If left untreated, proliferative retinopathy can cause severe vision loss and even blindness. Also, the earlier you receive treatment, the more likely treatment will be effective.

HOW IS DIABETIC RETINOPATHY TREATED?

To prevent progression of diabetic retinopathy, people with diabetes should control their levels of blood sugar, blood pressure, and blood cholesterol.

Proliferative retinopathy is treated with laser surgery. This procedure, called scatter laser treatment, helps to shrink the abnormal blood vessels. Your doctor places 1,000 to 2,000 laser burns in the areas of the retina away from the macula, causing the abnormal blood vessels to shrink. Although you may notice some loss of your side vision, scatter laser treatment can save the rest of your sight. Scatter laser treatment may slightly reduce your color vision and night vision.

Scatter laser treatment works better before the fragile, new blood vessels have started to bleed. If the bleeding is severe, you may need a surgical procedure called a vitrectomy. During a vitrectomy, blood is removed from the center of your eye.

HOW MUCH DO YOU KNOW?

If you have diabetes, do you know how to reduce your risk of vision loss? To determine what your Eye-Q is, answer the following questions.

1. People with diabetes are more likely than people without diabetes to develop certain eye diseases.
   - True   - False
2. Diabetic eye disease usually has early warning signs.
   - True   - False
3. People with diabetes should have yearly eye examinations.
   - True   - False
4. Diabetic retinopathy is caused by changes in the blood vessels in the eye.
   - True   - False
5. People with diabetes are at low risk for developing glaucoma.
   - True   - False
6. Laser surgery can be used to halt the progression of diabetic retinopathy.
   - True   - False
7. People with diabetes should have regular eye examinations through dilated pupils.
   - True   - False
8. Cataracts are common among people with diabetes.
   - True   - False
9. People who have good control of their diabetes are not at high risk for diabetic eye disease.
   - True   - False
10. The risk of blindness from diabetic eye disease can be reduced.
    - True   - False

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1. True. Diabetic eye disease includes diabetic retinopathy, cataract, and glaucoma. Diabetic retinopathy is a leading cause of blindness in adults. The longer someone has diabetes, the more likely he or she will develop diabetic eye disease.

2. False. There are often no warning signs in the early stages of diabetic eye disease. Vision may not change until the disease becomes severe.

3. True. Everyone with diabetes should get an eye examination through dilated pupils at least once a year. Because diabetic eye disease usually has no symptoms, regular eye exams are important for early detection and timely treatment.

4. True. In some people, blood vessels in the retina may swell and leak fluid. In other people, abnormal new blood vessels grow on the surface of the retina.

5. False. Glaucoma is almost twice as likely to occur in people with diabetes compared to those without the disease. Glaucoma usually can be treated with medications, laser surgery, or conventional surgery.

6. True. In laser surgery, a special beam of light is used to shrink the abnormal blood vessels or seal leaking blood vessels. Laser surgery has been proven to reduce the five-year risk of vision loss from advanced diabetic retinopathy by more than 90 percent.

7. True. An eye examination through dilated pupils is the best way to detect diabetic eye disease. In a dilated eye exam, drops are used to enlarge the pupils. This dilation allows the eye care professional to see more of the inside of the eye to check for signs of the disease.

8. True. People with diabetes are twice as likely to develop cataracts and to develop them at an earlier age as those without diabetes. Cataract surgery is safe and effective, with a 90 percent improvement rate.

9. False. Even with good control of blood glucose, there is still a risk of developing diabetic eye disease. However, studies show that careful management of blood sugar levels slows the onset and progression of diabetic retinopathy.

10. True. With early detection and timely treatment, the risk of blindness from diabetic eye disease can be reduced.

March is National Eye Donor Month

President Ronald Regan declared the first Eye Donor Month in 1983

- 46,000 Americans need a cornea transplant each year
- Anyone can become an eye donor—cataracts, poor eyesight or age do not prevent you from being a donor
- Only the cornea can be transplanted, however, the entire eye can be used for research and educational purposes
- In most cases, cancer and diabetes will not prevent you from being an eye donor
- There can still be an open casket funeral
- There are no costs to your family for donation

In 2010, The Mason Eye Institute helped restore sight to 52 cornea transplant recipients. Corneal transplant is one of the most frequently performed human transplant procedures. Since 1961, more than 1,000,000 corneal transplants have been performed, restoring sight to men, women, and children ranging in age from nine days to 107 years.

Becoming a donor is as simple as putting it on your driver’s license or letting your family or next of kin know about your choices to donate. The first corneal transplant was performed in 1905, and the first eye bank opened in New York in 1944. Eye Banks have successfully met the U.S. need for corneal and sclera tissue for several years. Over 90% of all corneal transplant operations successfully restore the recipient’s vision. If eye tissue cannot be used for transplant, it can be offered to ocular researchers across the U.S. who are working on discovering the causes of and cures for vision loss.

For information on becoming a donor go to: http://www.hleb.org/becoming-tissue-donor or call 800-331-2636

Mission of the Mason Eye Institute

The Mason Eye Institute is dedicated to providing the highest quality education, research and patient care in ophthalmology. The Mason Eye Institute provides leadership that sets standards for excellence in ophthalmology by developing well-trained, competent, compassionate ophthalmologists; expanding knowledge through basic science research and clinical investigations; and providing thorough, compassionate care to our patients, which includes the latest advances in medical eye care.

Thank you to those who have contributed to the furtherance of our mission through your generous gifts. John W. Cowden, M.D.
Professor and Chairman
## Mason Eye Institute Faculty

### CLINICAL FACULTY

**Arghavan Almony, MD**  
Dr. Almony joined the Department of Ophthalmology on September 1, 2010, as an Assistant Professor. She specializes in the diagnosis, treatment and surgery of diseases involving the macula, retina and vitreous.

**John W. Cowden, MD**  
Dr. Cowden is the chairman of the Department of Ophthalmology and specializes in cornea and external diseases of the eye. He performs corneal, refractive and cataract surgery.

**Chris DeRose, OD**  
Dr. DeRose specializes in primary care optometry, contact lens fitting and keratoconus.

**Jeffrey M. Gamble, OD**  
Dr. Gamble specializes in primary care optometry, contact lens fitting and keratoconus.

**Joseph Giangiacomo, MD**  
Dr. Giangiacomo specializes in pediatric ophthalmology, adult strabismus and adult cataracts.

**Dean P. Hainsworth, MD**  
Dr. Hainsworth specializes in retina and vitreous diseases. His current research includes macular degeneration and diabetic retinopathy.

**Lenworth N. Johnson, MD**  
Dr. Johnson specializes in neuro-ophthalmology. He is recruiting patients with recent onset vision loss from suspected optic neuropathy/optic neuritis or suspected pseudotumor cerebri for the Quark study. He also is recruiting individuals (regardless of health status) to participate in a study on the effects of temperature, pressure and humidity on mood (www.HappySadMood.com). As Residency Program Director, Dr. Johnson also oversees the education of our resident physicians.

**Don Liu, MD**  
Dr. Liu specializes in oculoplastic surgery and orbital trauma. His clinical interests also include orbital and eyelid tumor reconstruction, tearing, thyroid eye disease, eyelid reanimation, and socket reconstruction.

**Timothy D. McGarity, MD**  
Dr. McGarity specializes in general ophthalmology. His clinical interests are in cataract and refractive surgery.

**Tara G. Missoi, MD**  
Dr. Missoi began her faculty appointment as Assistant Professor of Clinical Ophthalmology on August 16, 2010. She specializes in pediatric ophthalmology, adult strabismus and cataracts.

**Marcos Reyes, MD**  
Dr. Reyes began working as Assistant Professor of Clinical Ophthalmology on August 2, 2010. He is a glaucoma specialist who performs cataract surgery, anterior segment surgery, glaucoma lasers and a variety of new glaucoma surgeries.

**Frank G. Rieger, III, MD**  
Dr. Rieger began working as Assistant Professor of Clinical Ophthalmology on August 2, 2010. He is a glaucoma specialist who performs cataract surgery, anterior segment surgery, glaucoma lasers and a variety of new glaucoma surgeries.

### RESEARCH FACULTY

**Martin L. Katz, PhD**  
Dr. Katz is currently involved in metabolic disease research, specifically in the study of neuronal ceroid lipofuscinosis (NCL), an inherited metabolic disease that affects nerve cells and ultimately causes blindness.

**Rajiv R. Mohan, PhD**  
Dr. Mohan specializes in corneal gene therapy, nanomedicine, wound healing and refractive laser surgery.

**K. Krishna Sharma, MSc, PhD**  
Dr. Sharma is Director of Research for the Department of Ophthalmology. His research involves understanding the molecular basis for lens transparency and cataract development.