

CUREGLAUCOMA

A newsletter from the Wilmer Eye Institute at Johns Hopkins

Fall 2011

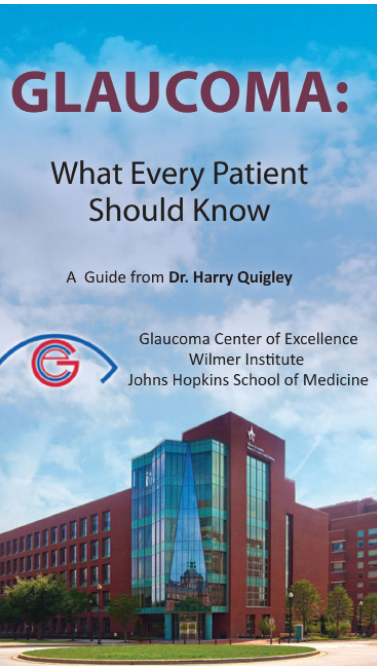
Finally, a book for glaucoma patients

If you or a member of your family has been told that you have glaucoma, or, if you have glaucoma and want to be sure that the treatment you're receiving is right for you, this patient-oriented guide is designed to answer the many questions you may have.

In 2010, Harry Quigley, M.D., Director of the Glaucoma Center of Excellence, sat down after each day and reflected on the questions patients had asked him and thought about how their concerns could best be answered. The result is the first extensive book about glaucoma written in easy to understand language. It starts from the beginning and covers "Glaucoma: What Every Patient Should Know." The guide gives authoritative answers, easily understood explanations, helpful suggestions, and life-style advice.

The guide has quick "Take Home" summaries at the start of each section highlighting the most important information, and is designed to answer the questions that patients ask, as well as the questions patients should ask their doctors. For those who know little about their glaucoma, it begins with a simple introduction to the disease. Those who want in depth information will find discussions of how the disease is diagnosed, what the treatment options are, and how to live a normal life with glaucoma.

Copies of the book can be purchased at the Wilmer glaucoma office or from our web site: <http://www.hopkinsmedicine.org/wilmer/gce/book>. The book is also available at Amazon.com in print or for the Kindle. All proceeds are being donated to research at Wilmer's Glaucoma Center of Excellence. □



Smallest eyes studied in biggest research study

The largest single-center glaucoma research study in the world is now being led by Wilmer's David Friedman, M.D., M.P.H., Ph.D.—and it's in China! Friedman is fluent in Mandarin and is a recognized world expert on angle closure glaucoma.

The Zhongshan Angle Closure Prevention Trial (ZAP) is being conducted in Guangzhou China because angle closure is more common among Chinese persons than in European, Indian or African-derived persons. The study has already screened over 10,000 people and enrolled nearly 900 participants in a trial of the effectiveness of laser treatment to prevent angle closure glaucoma. One eye gets the laser iris hole to relieve pressure and the other eye does not—and every patient receives free eye care and examinations twice per year at our affiliate eye hospital. Follow-up has been extremely high, with over 95% of those in the study continu-

ing through 18 months. This study will need about five years of visits in order to have conclusive evidence about who most benefits from laser treatment. Its findings will be the guiding force for programs worldwide that are trying to prevent blindness from angle closure glaucoma.

As part of this study, and in research being conducted here at home in the Wilmer Glaucoma Center of Excellence among our patients, Dr. Friedman is studying how angle closure causes its damage using sophisticated imaging technology that allows us to see the detailed anatomy of the inside of the eye. Patients who come for regular visits are being offered the chance to see and be imaged by these safe instruments and to contribute to medical knowledge, as well as to develop the new tests that can help our families and the next generation to be treated appropriately. □

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Producing the next generation of glaucoma specialists in the USA and worldwide

Faculty at the Glaucoma Center of Excellence are committed to teaching and mentorship in order to grow the number of doctors capable of caring, and finding solutions for glaucoma. Already, former Wilmer trainees have gone on to lead glaucoma divisions and/or ophthalmology departments around the world.



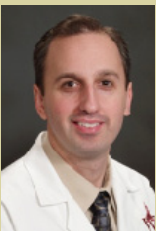
Dr. David Friedman leads the glaucoma fellowship at Wilmer, bringing both research and clinical fellows to the service. He holds weekly meetings with the fellows to

review difficult cases and to discuss how we make clinical decisions. These sessions emphasize a patient-centered approach to clinical care.



Dr. Pradeep Ramulu has helped redesign the Ophthalmology teaching curriculum for medical students and also redesigned how glaucoma is taught to resident physicians.

Twenty hours of classroom lectures were replaced with twenty hours of recorded online lectures supplemented by ten hours of small-group interactive teaching sessions led by the glaucoma faculty. Eighty percent of Wilmer residents found this teaching method was a significant improvement with regards to their learning.



Current glaucoma fellow, Dr. Derek Welsbie will serve as the Assistant Chief of Service (ACS) beginning in July 2012. In this role, he will be responsible for the clinical and surgical education of Wilmer's twenty Residents.

No improvement without introspection

Until we learn how to prevent and reverse all glaucoma through breakthroughs in research, we will continue to strive to improve our therapies. Surgery to lower eye pressure, specifically trabeculectomy surgery, remains a critical tool in our battle against vision loss from glaucoma. Although trabeculectomy has undoubtedly preserved the vision of many glaucoma patients, it is far from perfect. We are working toward making it as close to perfect as possible.

With the goal of learning what method works best in the way that we perform trabeculectomy, Harry Quigley, M.D., Henry Jampel, M.D., and their colleagues performed a comprehensive review of 800 trabeculectomies performed in Wilmer's Glaucoma Center of Excellence between 2000 and 2008.

Specifically, they wanted to know whether the site of the conjunctiva, the thin layer of tissue that covers the sclera (white part of the eye), had an important effect upon the outcome of the surgery.



Henry Jampel, M.D., examines patient.

“We found that the use of what is called a fornix-based conjunctival incision, which we adopted in 2005, was associated with a lower risk of one of the most serious complications of trabeculectomy - infection,” says Jampel. Other less serious complications, such as cataracts and lower eye pressure, were more common with the fornix-based approach. “Minimizing any risk of complication is what we strive to accomplish, but based upon our analysis, we feel confident that we are offering our patients the safest surgery possible today.” □

Neuroprotection: A new approach to protect the optic nerve

The major risk factor for optic nerve damage in glaucoma is an individual's level of eye pressure (intraocular pressure [IOP]). Standard treatment of glaucoma involve using medications, laser treatment, and intraocular surgery to lower a patient's IOP. Sadly, such treatments are not always effective and may have undesirable side effects. In an effort to develop novel treatment strategies to complement IOP lowering, Derek Welsbie, M.D., Ph.D. and Don Zack, M.D., Ph.D., work with several colleagues, including Drs. Quigley and Zhiyong Yang, a Ph.D. specialist in this area. This team approach has discovered small molecules (potential drugs) that can work to directly protect the optic nerve from damage.

"We are excited that Dr. Welsbie has joined our group after training in ophthalmology and glaucoma at the Wilmer GCE," says Quigley. Dr. Welsbie earned an M.D. and Ph.D. in Molecular Biology from the University of California, Los Angeles. While there, he had extensive experience developing new drugs in the treatment of cancer and is translating that experience into ground-breaking laboratory efforts to identify new potential drug targets in glaucoma.

An important step in developing these potential neuroprotective drugs is to figure out the mechanism by which they protect retinal ganglion cells (RGCs). Almost all drugs used today target little cellular machines called proteins. "We know that in glaucoma, the pressure in one's eye (and other factors) activates certain proteins that cause the RGCs to die, and one way neuroprotective drugs might work is by blocking the activity of these deleterious proteins," says Welsbie. Unfortunately, there are more than 20,000 proteins in mice and humans and we do not know which ones are important in causing RGC death. The good news is that two significant technologies have emerged in the last decade: the genome project, which cataloged each of those thousands of proteins and RNA interference, which allows researchers to selectively eliminate a protein of their choosing.

Therefore, a complementary approach to screening through thousands of small molecules, looking for drugs which promote RGC survival, is to screen through all 20,000 proteins, eliminating them one by one, and look for potential drug targets that promote RGC survival. Drs. Zack and Welsbie have engineered a novel method that allows them to do just this.

Although finding molecules that promote RGC survival in a plastic dish is very exciting, it is only a first step. One needs to next show that the identified neuroprotective molecules are active in animal models of glaucoma, and eventually test the potential drugs in humans to show that they are both safe and effective. Some of the most promising molecules identified to date have been tested in three models of optic nerve damage, and so far the results are very promising. A larger and more definitive study is now being carried out in another animal glaucoma model. If these studies are successful, the next step will be to develop a drug formulation suitable for testing in human volunteers. This ongoing work of Drs. Welsbie, Zack, Quigley, Yang, and colleagues will lead to new and more effective drugs for the treatment of glaucoma. □



Derek Welsbie, M.D., Ph.D., performing lab tests.

A big commitment to our youngest patients

The Wilmer GCE is delighted to welcome to our collaborative group, a highly trained physician and surgeon, Anya Trumler, M.D., who will focus on glaucoma as it affects children. Even newborn babies sometimes have a form of glaucoma, and its diagnosis and care is highly specialized. Trumler states, “The way in which pressure is measured and the way the eye responds are quite different in tiny eyes.”

“For many years, we shared the care of our youngest glaucoma patients with the Pediatric Division at Wilmer,” says Quigley, “and with the recruitment of Dr. Trumler, we have a truly integrated effort in this area.” Beyond the clinical and surgical care of pediatric glaucoma, there will be an expansion of effort into the field of pediatric glaucoma research.

Dr. Trumler obtained her early medical training at the University of Nebraska Medical Center and her fellowship training in Pediatric Ophthalmology and Adult Strabismus

at the University of California, San Diego. She did additional fellowship training in Pediatric Glaucoma at the Wills Eye Hospital in Philadelphia. Dr. Trumler is a published author of book chapters and journal articles in the areas of pediatric cataracts, glaucoma and strabismus. □

Anya Trumler,
M.D., with
youngpatient.



Glaucoma Center of Excellence Faculty

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