Capitol Hill Education
AEVR’s World Glaucoma Week Briefing Features
Real–Time OCT Imaging

On March 9, AEVR’s Decade of Vision 2010–2020 Initiative (DOV) hosted a Congressional briefing entitled Glaucoma: Understanding Disease Progression on the latest research during World Glaucoma Week 2011, co-sponsored by all major glaucoma societies. Glaucoma is a complex, neurodegenerative disease of the optic nerve and retinal nerve fiber layer (RNFL, the light-sensitive tissue in the back of the eye) that robs individuals of both peripheral and central vision. Since it often has no symptoms until vision loss occurs, NEI-funded researchers are studying the disease's progression, specifically how structural changes detected by advanced imaging techniques, such as Spectral Domain Optical Coherence Tomography (OCT), may correlate with vision changes.

Featured speaker Joel S. Schuman, M.D., a clinician-scientist continuously funded by NEI since 1995 who serves as Chairman of the Department of Ophthalmology at the University of Pittsburgh School of Medicine and Director of the Eye Center at University of Pittsburgh Medical Center (UPMC), initially described how the eye is mostly composed of fluid and that increased intraocular pressure (IOP) from that fluid can damage the optic nerve and retinal tissue, especially if the trabecular meshwork or the "drain" of the eye is not working properly. Current treatments for increased IOP include medications to reduce eye pressure, as well as laser treatments and surgical procedures to open the "drain," which were derived from NEI research. Current NEI-funded research is also focused on the genetic basis of glaucoma, to potentially develop gene therapy approaches to prevent it, as well as stem cell approaches to treat it.

Dr. Schuman emphasized that glaucoma damage is irreversible, so it is critical to detect glaucoma and its progression as early as possible. He stressed that structural changes in the optic nerve and RNFL may be predictive of glaucoma and how OCT is becoming increasing valuable as a means by which to measure these changes—in comparison to baseline images for an age group or population and in relation to a patient’s own previous images. OCT, which displays a three-dimensional, cross-sectional view of the retina and not just the superficial view of its surface provided by conventional imaging technologies, enables layers of the retina to be seen and analyzed with respect to structural changes associated with glaucoma and other blinding eye diseases, such as age-related macular degeneration (AMD) and diabetic retinopathy. To demonstrate that OCT is a non-invasive, high-speed technology, Carl Zeiss Meditec’s Kevin Langton conducted real-time imaging of both of AEVR Executive Director James Jorkasky’s eyes, the images of which were analyzed by Dr. Schuman.

"OCT has been the most rapidly adopted technology in eye care," said Dr. Schuman, who stated that there are now about 30,000 units in use in the US and elsewhere, as compared to a dozen or so when he appeared in 2006 on ABC’s Good Morning America to discuss the technology (a YouTube video of which he displayed on a plasma screen via his iPhone). “Although commercialized by industry, OCT imaging was initially developed with NIH funding, and its use today complements NEI's portfolio of research into the diagnosis and treatment of glaucoma,” Dr. Schuman, who noted that he was a member of the team that invented OCT, is also a Professor of Bioengineering at UPMC and founded its Glaucoma Imaging Group, where researchers examine the structure-function relationship in glaucoma and other diseases of the eye through the use of various cutting-edge imaging technologies.

Vision Caucus Reception Attracts Members of Congress

On March 3, NAEVR joined the vision community in co-sponsoring a Congressional Vision Caucus (CVC) reception organized by Prevent Blindness Iowa, in meeting with Cong. Nan Hayworth, M.D. (R-NY), an ophthalmologist, and Andea Densham (PBA), Cathy Cohen (American Academy of Ophthalmology, AAO), and Jeanne Burmeister of the Eye Center at University of Pittsburgh Medical Center (UPMC), initially described how the eye is mostly composed of fluid and that increased intraocular pressure (IOP) from that fluid can damage the optic nerve and retinal tissue, especially if the trabecular meshwork or the "drain" of the eye is not working properly. Current treatments for increased IOP include medications to reduce eye pressure, as well as laser treatments and surgical procedures to open the "drain," which were derived from NEI research. Current NEI-funded research is also focused on the genetic basis of glaucoma, to potentially develop gene therapy approaches to prevent it, as well as stem cell approaches to treat it.

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