

Using Real-time OCT, AEVR Educates Capitol Hill on Visual Imaging Technologies Revolutionizing the Diagnosis and Treatment of Eye Disease

The next generation of Optical Coherence Tomography (OCT), a powerful diagnostic imaging technology that has emerged from collaborative research between the NEI and the National Institute of Biomedical Imaging and Bioengineering (NIBIB) within NIH is already revolutionizing an eye care practitioner's ability to diagnose and monitor treatment of major eye diseases faster, more accurately, at lower cost, and with less discomfort for the patient than ever before, Alexander Walsh, M.D., told members of Congress and staffers in a February 26 Capitol Hill briefing.

"OCT has changed everything we do in ophthalmology," said Walsh, an assistant professor of ophthalmology at the University of Southern California and director of the Doheny Eye Institute's Imaging Exploration and Software Engineering Laboratory. "It represents an objective, standardized method for making a diagnosis and a quantitative way to monitor treatment progress and outcomes." Walsh spoke at this briefing sponsored by AEVR and held in conjunction with the Coalition for Imaging and Bioengineering Research (CIBR), the American Institute for Medical and Biological Engineering (AIMBE), ARVO, and the Ad Hoc Group for Medical Research.

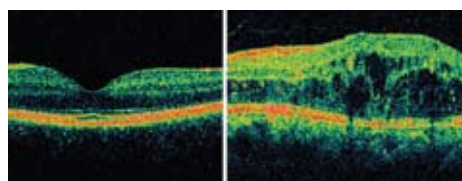
OCT is a non-invasive, high-speed, high-resolution imaging technology that can



Normal vs. Diabetic Retinopathy (traditional fundus photography images) Early diagnosis is critical in patients with diabetic retinopathy since those with healthy retinas (left) who receive timely laser treatments have a better chance of visual preservation than patients with diagnoses that are missed (right) and who often become legally blind.

now display a three-dimensional, cross-sectional view of the retina, not just the superficial view of its surface provided by conventional imaging technologies. Layers of the retina can then be separated on the computer screen to visualize and diagnose eye diseases, such as AMD, diabetic retinopathy, and glaucoma. "With OCT, we can now see minute tissue layers deep inside the eye to determine what might well have been missed before. Quantifying the state of the eye's interior leaves less to subjective judgment and helps both practitioners and patients understand the disease and measure treatment progress," said Walsh, who demonstrated the speed and simplicity of an OCT scan with a live demonstration using a next-generation system provided by Topcon Medical Systems.

"The need for OCT grows all the time," said Walsh, who added that ongoing collaborations among the NEI, NIBIB, academic researchers, and industry are leading to further refinements in the technology. "Although currently used primarily in a retinal specialist's office, OCT has widespread potential as a cost-effective tool to screen for AMD, diabetic retinopathy, and glaucoma," he said, while also acknowledging that the technology is just beginning to expand into other medical fields, such as cardiology, dermatology, and gastroenterology.



Normal vs. Diabetic Retinopathy (OCT images) Retinal swelling (right) is a common cause of visual blurring in patients with diabetic retinopathy. The quantitative measurement of retinal thickness by OCT can improve management of therapies and decrease unnecessary or costly treatments.



Attendees view real-time OCT images



Topcon Medical Systems' Aaron Graham performs a retinal scan



CIBR President Renee Cruea offered a welcome and commented that, with respect to medical imaging, "We can be proud of the state of the science now, but we also have to be aware of how much further we have to go."



Prior to the briefing, Dr. Walsh met with Melissa Bez in the office of Cong. Henry Waxman (D-CA) of the House Energy and Commerce Committee, with authorization jurisdiction over the NIH



NAEVR's James Jorkasky and Dr. Walsh also met with Sean McCluskie (right) in the office of Cong. Xavier Becerra (D-CA), whose district includes the USC campus