A Space Age View Into Human Vision: Abbott's IDesign Dx System Now Available For U.S. Ophthalmologists And Patients

Captures Five Optical Measurements in One High-Resolution Scan; Same Wavefront Sensing Technology Used to Measure NASA's James Webb Space Telescope's Optics

ABBOTT PARK, Ill., Dec. 17, 2013 /PRNewswire/ -- With the introduction of Abbott's iDesign Dx system, U.S. ophthalmologists now have a diagnostic tool that can capture five optical measurements in one three-second scan to determine the patient's visual abnormalities. This highly advanced diagnostic tool measures the internal optics and surface of the eye more precisely than conventional methods, allowing doctors to fully evaluate imperfections that result in poor vision. Obtaining these measurements in one three-second scan enables ophthalmologists to screen patients more efficiently to determine if they are eligible for LASIK or other refractive surgery and to assist in diagnosis of other conditions.

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The iDesign Dx system uses advanced wavefront sensing technology to measure and map"aberrated" eyes – i.e., eyes with visual irregularities. This same technology, developed by Abbott scientists, was used by NASA to measure and precisely shape the mirrors in the James Webb Space Telescope to ensure it transmits high resolution images of deep space back to Earth after it launches in 2018.

"The same technology used to measure optics in space telescopes has now been applied to the eye with the iDesign Dx system, allowing us to take microscopically-precise measurements of the eye with greatly increased resolution," said Steven Schallhorn, M.D., clinical professor, University of California San Francisco Department of Ophthalmology. "These higher-resolution measurements provide details that improve our ability to measure ocular aberrations with accuracy, precision and greater dynamic range."

The iDesign Dx system measures not only the optical system, but also individual components of the eye. This means the iDesign Dx system can capture the shape of the cornea; its curvature/power; the ocular wavefront; a patient's refraction (how light passes through the eye); and pupil diameter under different lighting conditions – all in one scan of the eye.

How Wavefront Sensing Technology Works

The wavefront sensor measures all aspects of light: its intensity or brightness, as well as the light ray angles on the eye. By sending a beam of light into a patient's optical system and measuring the quantity and quality of light that bounces back, the wavefront sensor provides important data on the performance of the system, as well as where improvement is needed.

"The iDesign Dx system, at its core, is the next generation of wavefront technology – most significantly, the improved degree of resolution that can now be captured," said Dr. Schallhorn. "Passing through the optics of the eye, the wavefront technology projects a small spot of light on the retina. That light scatters from the retina and is collected by the lens in the eye through the cornea and then travels back into the instrument."

The iDesign Dx system's wavefront sensor is made from a tiny micro lens array comprising thousands of lenslets, each the diameter of a human hair. This lens array increases the resolution of the wavefront scan five-fold. With this data, ophthalmologists can see increased details of the cornea and the optical system.

Availability

The iDesign Dx system launched in 2013 in the United States for diagnostic use. In Europe and a number of countries around the world, including Australia, Brazil, Canada, India, Japan, and New Zealand, the iDesign Advanced WaveScan Studio is currently approved for LASIK treatment, planning, screening and diagnostics. The iDesign Advanced WaveScan Studio is not approved in the United States.

About Abbott Medical Optics (AMO)

Abbott Medical Optics is focused on delivering life-improving vision technologies to people of all ages. The company offers a comprehensive portfolio of cataract, refractive and eye care products. Products in the cataract line include laser cataract technology, monofocal and multifocal intraocular lenses (IOLs), phacoemulsification systems, viscoelastics, and related products used in ocular surgery. Products in the refractive line include wavefront diagnostic devices, femtosecond lasers and associated patient interface devices; excimer laser vision correction systems and treatment cards. Products in the eye care line include disinfecting solutions, enzymatic cleaners, lens rewetting drops and artificial tears. For more information, please visit www.abbottmedicaloptics.com.

About Abbott

Abbott is a global healthcare company devoted to improving life through the development of products and technologies that span the breadth of healthcare. With a portfolio of leading, science-based offerings in diagnostics, medical devices, nutritionals and branded generic pharmaceuticals, Abbott serves people in more than 150 countries and employs approximately 70,000 people.

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