New glaucoma test allows earlier, more accurate detection

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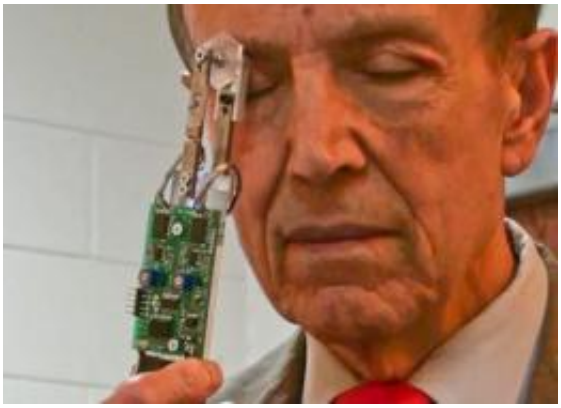

Cumbersome glaucoma tests requiring a visit to the ophthalmologist could soon be history thanks to a home test developed by an engineer at the University of Arizona.

A new hand-held instrument involving a system of micro-force sensors, specially designed microchips, and math-based programmed procedures has been designed by researchers at the UA College of Engineering. The easy-to-use probe gently rubs the eyelid and can be used at home, threatening to replace painful eye drops and the need for a sterilized sensor.

"You simply close your eye and rub the eyelid like you might casually

rub your eye," said Eniko Enikov, professor of aerospace and mechanical engineering and head of the Advanced Micro and Nanosystems Laboratory at the University of Arizona's College of Engineering. "The instrument detects the stiffness and, therefore, infers the intraocular pressure," Enikov said.

Work on the probe began four years ago in collaboration with Dr. Gholan Peyman, a Phoenix ophthalmologist. The instrument went through several years of refinement and modifications to arrive at the current design, a prototype instrument that's noninvasive and simpler than current procedures. It can also be used in situations that are difficult or impossible with current tests.

In addition to screening for glaucoma -- an eye disease that can lead to blindness if left untreated -- the device can be used to measure drainage of intraocular fluid. Patients could use the probe at home to trace how much the pressure decreases after using eye drop medications.

According to the Glaucoma Research Foundation, glaucoma is a leading cause of blindness. There is no cure, everyone is at risk, and there may be no symptoms to warn you. More than 4 million Americans have glaucoma but only half know they have it.

The development work was funded through the National Science Foundation, and Enikov and Peyman now are seeking investors to help fund final development and commercialization of the product.

"The innovation with our device is that it's noninvasive, simpler to use and applies to a variety of situations that are either difficult to address or impossible to test using the current procedures," Enikov said. "That's why we're so excited about this probe. It has great potential to improve medical care, and significant commercial possibilities, as well."

Provided by University of Arizona