

## **MEDICAL BREAKTHROUGHS** **RESEARCH SUMMARY**

TOPIC:           GLAUCOMA APP: SPOT THE EARLY SIGNS  
REPORT:        **MB #4938**

**GLAUCOMA BACKGROUND:** Glaucoma is an eye disease that slowly deteriorates vision. It starts with a person's peripheral vision and works its way to the central vision, leading to eventual blindness if not treated. There is no pain involved with the vision loss, and loss of vision can be hard to detect due to it deteriorating in what appear to be natural 'blind spots' in your peripheral sight. Therefore, most patients are unaware of the loss of vision until the glaucoma has significantly progressed. This disease is life long after the initial development; there is no cure. Treatments include preventative drops or surgeries. A person is at an increased risk if they have a history of family members with this disease.  
(Source: <https://www.glaucoma.org/glaucoma/symptoms-of-primary-open-angle-glaucoma.php>)

**DIAGNOSING GLAUCOMA:** There are no symptoms of glaucoma until significant vision loss occurs. For this reason, annual eye exams are necessary to receive early detection and start preventative treatments. Though mostly genetic, the causes of glaucoma can be advancing age, ethnicity, physical injury or trauma to the eye, intraocular pressure (IOP), and diabetes or heart disease. Among elderly patients, the likelihood that they will forget or not participate in their own daily preventative treatment plan provided by their doctor is high. This is another reason that families need to be involved in the care of a glaucoma patient as well as getting tested annually for glaucoma themselves.  
(Source: <https://www.healthline.com/health/glaucoma#symptoms>)

**GLAUCOMA NEW TECHNOLOGY:** A study is being conducted on the use of virtual reality goggles on patients with glaucoma. The NGoggle is worn by the patient and could help improve early diagnosis and prevent vision loss. The device uses light to stimulate targeted areas in the patient's visual field. The NGoggle assesses peripheral vision loss through brain activity. It sends signals to the eyes and gauges whether there is diminished brain activity or response time; if so, this could indicate that the patient may have early signs of glaucoma. The virtual reality goggles have electroencephalography (EEG), a series of electrodes that measure brain activity by adhering to the scalp. Within a few minutes the brain activity can be relayed through the device and test the patient's eye responses. The patients can do anything from playing a video game to taking a virtual tour while being tested for glaucoma, making the device more user friendly than normal eye exams and hopefully increasing the number of patients willing to get tested for early preventative glaucoma treatment.  
(Source: <https://www.nei.nih.gov/about/news-and-events/news/glaucoma-detection-gets-potential-boost-virtual-reality-brain-based-device>)

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**If this story or any other Ivanhoe story has impacted your life or prompted you or someone you know to seek or change treatments, please let us know by contacting Marjorie Bekaert Thomas at [mthomas@ivanhoe.com](mailto:mthomas@ivanhoe.com)**