

Home measurement of eye pressure in children may improve management of glaucoma

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Measurement of pressure within the eye, or intraocular pressure (IOP), is known to fluctuate throughout the day, and wide swings in patients with glaucoma are believed to be related to the progression of the disease, which can cause permanent damage to the optic nerve and vision. The clinical assessment of IOP, however, has been restricted to office visits during daytime hours. In a new study, parents using the Icare Rebound Tonometer evaluated IOP patterns in normal children at home, establishing comparative values that may be useful for the study and treatment of children with glaucoma. The research is published in the February issue of the *Journal of the American Academy of Pediatric Ophthalmology and Strabismus*.

"Diabetes is monitored by patients using home glucose monitors, but there has been no equivalent home technique for patients to use to measure their own eye pressures - until recently." says lead investigator Sharon F. Freedman, MD, Professor of Ophthalmology and Pediatrics, Chief, Pediatric Division, Duke Eye Center. "We found that home measurement of IOP is not only quite possible, but provides some baseline information about the expected variability of eye pressures in the normal eyes of healthy [children](#)," "We hope this will open the door to the use of home tonometry for selected children and adults with known glaucoma, and will be helpful in managing the disease."

The parents of 11 children were instructed on the proper use of the Icare rebound tonometer, a device that doesn't require anesthetic drops or specialized training, and were observed taking readings until they could reliably obtain IOPs in their children. At home, the parents measured IOP 6 times daily for two consecutive days, from 6:00 am to 11:00 pm.

The Icare tonometry was well tolerated by all subjects and caused no complaints, discomfort, or adverse effects. "We found that normal eyes of healthy children have a fluctuation in eye pressure of about five mm Hg throughout the day. The eye pressure tends to be higher in the morning and lower in the evening, and 'what the right eye does, so does the left eye,' in that the two normal eyes of a healthy child go up and down in unison," explains Dr. Freedman.

Journal of AAPOS Editor-in-Chief David G. Hunter, MD, PhD, of the Children's Hospital Boston and Harvard Medical School, notes, "Measurement of eye pressure has long been a challenge in children and has only been possible in the office. This study shows that it may be possible for people of all ages to measure [eye pressure](#) at home, which could provide important information about pressure changes on a daily basis that will advance the quality of care for glaucoma patients."

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