

Programmable electronic glasses provide children effective, digital lazy eye treatment

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Electronic glasses have been proven as effective as eye patches for lazy eye in children. Credit: American Academy of Ophthalmology

A new study on lazy eye found that programmable electronic glasses help improve vision in children just as well as the more traditional treatment using eye patches. This "digital patch" is the first new

effective treatment for lazy eye in half a century. Results from the first U.S. trial of this device will be presented at AAO 2015, the 119th Annual Meeting of the American Academy of Ophthalmology.

Lazy [eye](#), also called amblyopia, remains the most common cause of visual impairment in children. Amblyopia is poor vision in an eye that did not develop normally during early childhood. This can occur when one eye is much more nearsighted than the other, or when one eye wanders or strays inward. The child needs to receive treatment by the age of 8 or so while their eyes and brain are still developing, or he or she could become blind in the weaker eye.

Unfortunately, getting kids to comply with lazy eye treatments like eye patches or medicated drops remains a significant challenge for both ophthalmologists and parents alike. A recent study found that 1 in 4 kids feel anxiety before using [eye drops](#). Nearly 15 percent refuse to take eye drops at all. Both drops and eye patches work based on the occlusion method. This blocks vision in the eye with the best sight, forcing the brain to rely on the so-called lazy eye. During the process, vision improves though many children will still need glasses to correct their eyesight.

In comparison, the electronic glasses used in this study combine vision correction and occlusion. The lenses can be filled to fit a child's vision prescription. Because the lenses are liquid crystal display (LCD), they can also be programmed to turn opaque, occluding vision in the left or right eye for different time intervals, acting like a digital patch that flickers on and off.

Researchers at the Glick Eye Institute at Indiana University recently tested the effectiveness of occlusion glasses compared to patching in a randomized clinical study. They recruited 33 subjects with lazy eye between age 3 and 8 who wore spectacles to correct their vision. One

group wore an adhesive patch for two hours daily. The other wore Amblyz occlusion glasses for 4 hours daily. In the study, the lens over the eye with better [vision](#) switched from clear to opaque every 30 seconds. After three months, both groups of children showed the same amount of improvement in the [lazy eye](#), gaining two lines on a reading chart.

"When you talk to adults who underwent childhood treatment for amblyopia, they will tell you that wearing a patch was the worst thing ever," said Daniel Neely, M.D., a pediatric ophthalmology professor at Indiana University who led the study. "With these electronic occlusion glasses, the child learns that the lens will be clear again in just a few seconds so they may be more cooperative with the treatment. For parents who have struggled with drops and patching, this could be a great alternative."

The U.S. Food and Drug Administration has approved the Amblyz occlusion glasses as a medical device. They are available in the United States from eye care professionals for around \$450.

A Randomized Trial of Amblyz Liquid Crystal Occlusion Glasses vs. Traditional Patching for Treatment of Moderate Unilateral Amblyopia in Children (PO169) was presented at AAO 2015, the 119th annual meeting of the American Academy of Ophthalmology. The event runs Nov. 13-17 at the Sands Expo/Venetian in Las Vegas. Known as the place "Where all of Ophthalmology Meets," the Academy's annual meeting is the largest ophthalmology conference in the world. For more information, see AAO 2015 highlights.

Provided by American Academy of Ophthalmology

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