

Adolescent vision screenings may miss farsightedness and astigmatism

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Among adolescents, visual acuity tests appear to reliably detect vision problems caused by nearsightedness but not farsightedness or astigmatism, according to a report in the July issue of *Archives of Ophthalmology*.

Uncorrected refractive error—a malfunction in the way the eye focuses light—is the most common cause of reduced vision in children, according to background information in the article. Myopia (nearsightedness) and astigmatism (abnormal curvature of the cornea) are two major types of refractive error in children; while hyperopia (farsightedness) is less likely to reduce visual acuity, it is a risk factor for strabismus (crossed eye) and [amblyopia](#) (lazy eye). The current standard in vision screening for school-age children involves the use of linear charts viewed at a distance.

Jody Fay Leone, B.App.Sci.(Orth)Hons, of University of Sydney Cumberland Campus, Lidcombe, Australia, and colleagues assessed 2,353 year 7 students (average age 12.7 years) at 21 secondary schools in Sydney. As part of a comprehensive [eye examination](#), uncorrected visual acuity was measured in one eye at a time using a logMAR chart, an [eye chart](#) with rows of letters. To detect hyperopia and astigmatism, the participants also underwent cycloplegic autorefraction, a procedure in which lenses are assessed after paralyzing the pupil of the eye with special drops, and keratometry, a measurement of the cornea's curve.

The average visual acuity score was 54 letters; the relationship between

visual acuity and refractive errors was complex. A cutoff point of 45 letters reliably identified teens with myopia. However, no reliable cutoff was found for either hyperopia or astigmatism. This result "means that many children with clinically significant levels of hyperopia and astigmatism would not be referred for treatment," the authors write.

"The best visual acuity thresholds for detecting clinically significant hyperopia and astigmatism were 57 and 55 letters or less, respectively, which equates to normal visual acuity of 6/6 or less, making the use of these thresholds quite meaningless," they continues. "On occasion, even children with very high levels of hyperopia achieved near-normal levels of visual acuity. If these visual acuity values were used to identify children with hyperopic and astigmatic refractive errors, the level of over-referral would unacceptably high."

Further research is needed to develop screening methods that can reliably detect these visual conditions in children and adolescents, the authors conclude.

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