

central vision at high contrast.¹

- Explain the procedure to the person.
- Position the person, sitting or standing, at a distance of 6 metres (20 feet) from the chart.
- Clean and dry the occluder. If no plain occluder is available, use clean card or a tissue. Ask the patient to cover one eye but not to press on it.
- Test one eye at a time. Starting from the top of the chart, ask the person to read the letters (Snellen chart) or point in the direction of the open end of the letter (tumbling E or C chart). Position the chart at 3 metres (10 feet) if the person's vision is less than 6/60 and record as 3 metres instead of 6 (e.g. 3/60).
- Record the visual acuity (written as a fraction next to the smallest line the person can read). For example, if the person cannot read the bottom row (visual acuity of 6/6) but can read the next row of letters (6/9) then their visual acuity is 6/9.
- If the patient cannot see the letters on the 6/6 line, they may have a refractive error, such as myopia.

3 Perform a pinhole test

Pinhole testing is mainly used for adults and older children. Children under 7-8 years old would struggle to see with a single pinhole. Occluders with multiple pinholes may work better, but if these are unavailable, refer all children with VA of < 6/6 for refraction.

A pinhole occluder (an opaque disc with one or more small holes) is used to determine whether reduced vision is caused by refractive error. If this is the case, the pinhole will cause an improvement in visual acuity.

If the pinhole worsens vision, this can indicate macular disease, central lens opacities or other causes of reduced vision. If there is no change in visual acuity, this might be caused by amblyopia. Children and adults suspected of having these conditions must be referred.



HEIKO PHILIPPIN

Steps

- Clean and dry the pinhole occluder.
- Ask the patient to cover one eye with the occluder and position the pinhole so they can see through it.
- Test one eye at a time by following the same procedure used to test visual acuity.

4 Should I refer?

If the person can read more letters with the pinhole than without, they are likely to have a refractive error, such as myopia. All patients (adults and children) whose acuity improves with a pinhole, and/or who present with symptoms consistent with a refractive error, should be referred for a full refraction and an eye health examination. Refer patients with signs or symptoms of eye disease for a comprehensive eye examination (including a slit lamp examination, if possible) if you are unable to carry one out yourself.

A pinhole occluder is an opaque disc with one or more small holes. In people with myopia, visual acuity increases with the use of a pinhole. TANZANIA

Further reading

- 1 Marsden J, Stevens S, Ebri A. How to measure distance visual acuity. *Comm Eye Health J* 2014;27(85):16.

Who is at risk of myopia?

By **Tim Fricke, Priya Morjaria** and **Padmaja Sankaridurg**

Ethnicity is a significant risk factor, with individuals from East and South East Asian countries at greater risk of developing myopia.¹ More importantly, myopia begins at an earlier age in these individuals, resulting in a greater number of years during which myopia can progress. This increases the risk that they will develop high myopia.²

Older children are more likely to develop myopia.³ However, annual progression is significantly greater in younger children.⁴ A 6-year old child with myopia will have significantly greater progression than, for example, a 10-year-old, placing them at greater risk of high myopia.

Parental myopia may also influence onset with those with both parents being myopic at greater risk of developing myopia.²

There is also a small difference in prevalence between males and females, with females at greater risk of myopia than males.⁵



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Girls are more likely than boys to develop myopia, although the difference is small. INDIA

References

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- 2 French AN, Morgan IG, Mitchell P, et al. Risk Factors for Incident Myopia in Australian Schoolchildren: The Sydney Adolescent Vascular and Eye Study. *Ophthalmology* 2013;120(10):2100-08.
- 3 Saw SM, Tong L, Chua WH, et al. Incidence and progression of myopia in Singaporean school children. *Invest Ophthalmol & Vis Sci* 2005;46(1):51-7.
- 4 Sankaridurg P, Holden BA, Donovan LA, et al. An annual rate of myopic progression model for asian children. *IOVS* 2014;55(13):3629.
- 5 Sun J, Zhou J, Zhao P, et al. High prevalence of myopia and high myopia in 5060 Chinese university students in Shanghai. *Invest Ophthalmol & Vis Sci* 2012;53(12):7504-9.