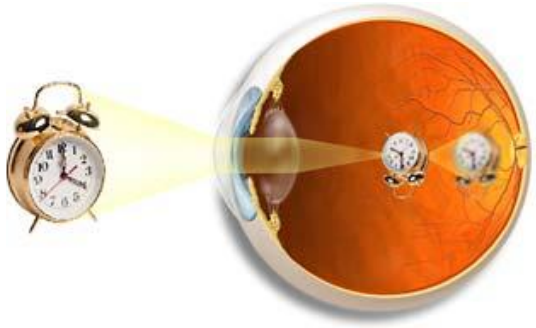
Visual Conditions in Infants and Toddlers

Refractive Errors Fact Sheet

EIVI Training Center. (2003). *Refractive errors fact sheet.* Chapel Hill, NC: Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, UNC-CH.

What is myopia?

The common name for myopia is nearsightedness. In myopia objects that are nearby are seen clearly, but distant objects do not come into proper focus. Nearsightedness occurs if the eyeball is too long or if the bending powers of the cornea and the lens are too strong, so that the rays of light entering the eye is focused in front of the retina.



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> *This graphic is a cross section of the eye, showing the retina, viewing an alarm clock. The image of the alarm clock passes through the pupil and is seen upside down and in focus in front of the retina as in an eye with myopia and on the retina as in a typical eye.*

The normal eye is about 24mm in diameter. In cases of severe myopia, the eye gradually enlarges in the front and rear and can reach about 30 mm in diameter. In those cases the retina and choroids are also stretched, causing their function to decrease. These eyes do not have good visual acuity even when the focus is properly centered on the retina. Finally, the retina and choroids may become very thin, leading to retinal detachment that results in visual loss if left untreated.

Signs and symptoms of myopia

The most common sign of nearsightedness is difficulty seeing distant objects. Objects appear fuzzy, depending on distance. In young children signs of myopia may include behaviors such as ignoring objects in the distance, frowning, squinting, and frequent headaches.

Treatment of myopia

An examination by an eye care specialist includes testing for nearsightedness. Optometrists or ophthalmologists can prescribe eyeglasses or contact lenses to optically correct nearsightedness by altering the way that light enters the eyes.

What is hyperopia?

Hyperopia, or farsightedness, occurs when light entering the eye is focused behind the retina, instead of directly on it. Hyperopia results from a shorter than normal eyeball or from the reduced bending power of the cornea or the lens. Children with hyperopia usually have trouble seeing up close but may have difficulty seeing far away as well. People are generally born with a small amount of hyperopia, but as the eye grows this decreases.

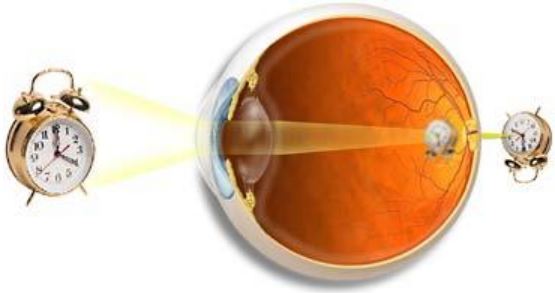

Illustration reprinted with permission from, Erickson, M. (n.d.). *Farsightedness (hyperopia)*. Retrieved February 11, 2004, from www.jirehdesign.com

> *This graphic is a cross section of the eye, showing the retina, viewing an alarm clock. The image of the alarm clock passes through the pupil and is seen upside down and in focus behind the retina as in an eye with hyperopia and on the retina as in a typical eye.*

Signs and symptoms of hyperopia

Children who are hyperopic have difficulty seeing up close and, depending on the severity of the condition, may have blurred distance vision. Hyperopia may also cause eye fatigue and strain resulting in headaches, a pulling sensation, or burning of the eye. Young children with hyperopia may also have crossed eyes or strabismus.

Treatment of hyperopia

Hyperopia is detected with a vision test called refraction. Young children's eyes are dilated for this test so they are unable to mask their farsightedness with accommodation. The treatment for hyperopia depends on the child's age and activity level. Young children may or may not require glasses or contact lenses, depending on their ability to compensate for their farsightedness with accommodation.

References

Wright, K.W. (2003). Refractive errors and spectacles in children. In K.W. Wright (Ed.), *Pediatric ophthalmology for primary care* (2nd ed., pp. 71-76). Los Angeles: American Academy of Pediatrics.

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