FAMILY EYE CARE
& PEDIATRIC VISION CENTER, PLLC

Refractive Error - Various

The Following Information has been Prepared for You:

When light enters the eye, it must come to focus on the retina to provide sharp vision. However, various eye shapes can cause the light to be out of focus. Your optometrist can determine how much to bend the light using glasses or contact lenses to refocus the light on the retina. The process of bending the light is called "refraction." The magnitude of the bent light is called the "refractive error." While glasses and contact lenses can bend the light, they do not offer a permanent solution. Your eye's shape will not change when wearing glasses or contacts. Therefore, if you have a refractive error, removing the glasses or contacts will cause your vision to return to a blurry state. Refractive surgery (aka LASIK, PRK, or RK), corneal ring implants, and intraocular lens implants can permanently change the shape of the eye, and the way the light focuses through it and offer long-term vision correction without the use of glasses or contact lenses.

Refractive error is largely inherited. However, environmental factors, health conditions, medications, injury, surgery, and the aging process can cause a person's refractive error to change over their lifetime.

There are 4 main types of refractive error:

Hypermetropia (aka Hyperopia & Farsightedness) is caused by light that comes to focus behind the retina. Patients with hypermetropia typically have small or short eyeballs as measured from the front to the back. Infants are typically born hyperopic. Your lens has the ability to change shape and bring the light rays closer to the retina to obtain sharp vision. However, sometimes, the degree of hyperopia is too much for the lens to handle. Some patients may have weak muscle control of their lens and cannot accommodate the amount of work required. The muscles tend to get weaker with age and many patients start to require glasses in their 40's to see sharply. Uncompensated hyperopia can cause blurred vision, fluctuating vision, eye fatigue, light sensitivity, headache around the eyes or forehead, crossed eyes (especially in children), loss of depth perception or hand-eye coordination, watery eyes and red eyes. In order to bring hyperopic eyes into focus, your optometrist uses convex, or "positive" power lenses.

Myopia (aka Nearsightedness) is caused by light that comes to focus in front of the retina. Patients with myopia typically have large or long eyeballs. When children present with myopia, their eyes typically get more myopic as they grow and their eyes continue to lengthen. It usually stops progressing around the age of 20, when growth is complete. It may slightly decrease after the age of 40. Myopia is typically inherited, but environmental factors play a role. Excessive near-vision tasks such as reading or computer, working under low light conditions, and not getting enough daily sunlight are all potential contributors to myopia development. There has been a worldwide trend of increased myopia, thought to be caused by more people doing extended near tasks on a daily basis, and staying indoors for longer amounts of time. Myopia causes blurred vision that gets blurrier the further away you look. It may be particularly bothersome with night driving. Unlike hyperopia, a person cannot easily accommodate for myopia. Squinting may offer some degree of improved focus but is not recommended. Squinting increases the risk of tension headache and wrinkles around the eyes and brow. It may also cause another type of refractive error called astigmatism. Your optometrist will use concave lenses with "negative" power lenses to focus the light onto your retina.

Astigmatism is caused by light that is split into at least two different focal points within the eye. The focal points may be behind, in front, or on the retina. "Regular" astigmatism causes two focal points in the eye and is the most common. The vision can be refocused with glasses or "toric" contact lenses. "Irregular" astigmatism causes multiple focal points and is very difficult to treat with corrective glasses or contact lenses. Astigmatic eyes can be long or short, small or large, but they all have an uneven or irregular curvature (football, egg or oval shape) of the cornea or lens, which causes the light to split as it passes through the eye. It tends to occur with other refractive disorders, such as hyperopia or myopia. Astigmatism is typically inherited and may present itself at any time throughout life. It may also be caused by various eye diseases such as cataracts, keratoconus, chalazion, etc. Symptoms include blurred vision at any distance (sometimes worse far away or up close), halos or starbursts around lights, squinting, headache, light sensitivity and watery, red, or tired eyes. Your optometrist will prescribe lenses that will refocus the light into a sharp point on the back of the eye. Irregular astigmatism may need special "scleral" contact lenses in order to optimally focus the light.

Presbyopia is an additional age-related condition that causes either the lens within the eye to become less flexible or the muscles that focus the lens to get weak. It typically presents in the 40's. Symptoms include a change in the ability to focus the eyes on a near target. Everyone eventually develops presbyopia. Patients that are hyperopic before the age of 40 tend to have more profound near vision loss once presbyopia develops. Myopic patients may see for a while up close if they take their glasses off, but this ability also tends to decline with age. Optometrists correct presbyopia by giving a separate near prescription for glasses or contact lenses. The prescription may be in the form of a bifocal, trifocal, or multifocal lens. A technique called "monovision" is sometimes employeed to individually focus one eye at distance and one eye at near, instead of using a bifocal lens on each eye. Currently, refractive surgery (aka LASIK) cannot correct presbyopia. However, new technology has allowed multifocal lens implants that are being used regularly for cataract surgery. Patients receiving these implants typically have restored vision at all ranges, without the use of glasses or contact lenses.

Please make time to have a complete eye and vision examination annually.

Contact our office with any significant vision changes or emergencies that you feel require immediate attention.

Please Rate the Information You Received

	☐ Very helpful - all questions are answered ☐ Somewhat helpful - I still have questions ☐ Not helpful – none of my questions were answered
Comments / Questions / Typos:	

Provider Contact Information

Family Eye Care & Pediatric Vision Center, PLLC
Melissa Holliman, OD
David Holliman, OD
Brandon Holliman, OD

1203 N. Eastman Rd
Kingsport, TN 37664
Phone: (423) 274-3321
Fax: (423) 247-3631
FamilyEyecareKingsport@gmail.com
Website: DrHolliman.com