

# Refractive Errors

## What?

## So What?

## Now What?



Refractive errors occur when the shape of the eye prevents light from focusing directly on the retina, resulting in blurry vision.

Acknowledgments: Samuel, A., Kumar, A., Yelle, B., Baig, K., Sabeti, S.

## What causes refractive errors?

Light travels through the eye to focus on the retina (back of the eye), which allows the brain to form an image.

- When light does not focus directly on the retina, this is known as a **refractive error**.
  - Refractive errors cause blurry vision.

There are three main types of refractive errors:

- **Myopia (nearsightedness)**
  - Difficulty seeing objects in the distance.
  - Occurs when the eyeball is too long, which causes an image of a distant object to focus **in front of** the retina.
- **Hyperopia (farsightedness)**
  - Difficulty seeing objects up close and sometimes in the distance.
  - Occurs when the eyeball is too short, which causes an image of a distant object to focus **behind** the retina.
- **Astigmatism**
  - Occurs when the cornea (clear, front window of the eye) is shaped like a watermelon or football, instead of a sphere.
  - This abnormal curvature causes two focal points in two different locations, resulting in blurry vision.

## Why do refractive errors matter?

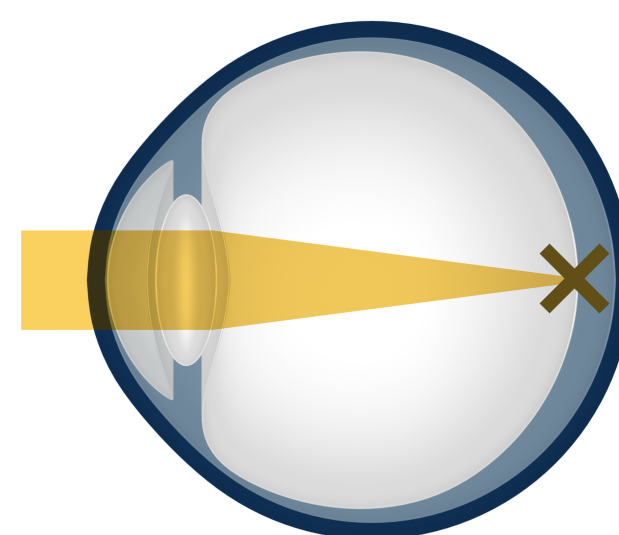
Refractive errors impact the ability to see, which may impact quality of life.

- By 2050, it is estimated that 50% of the population will be myopic.

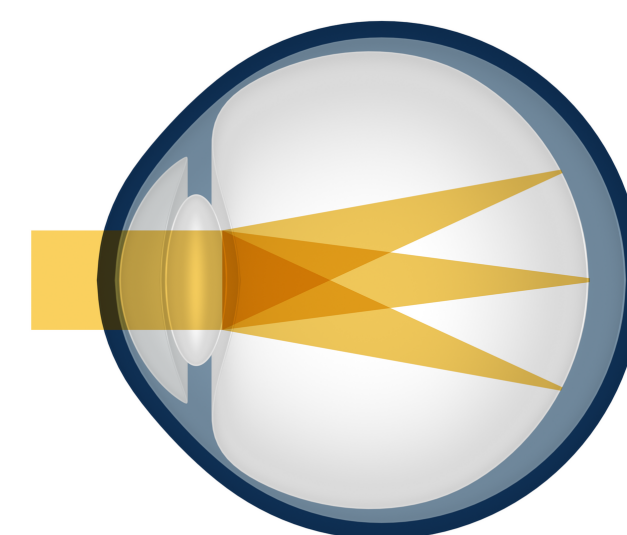
### Myopia Risk Factors:

- Prolonged close-up activities
- Family history
- Increased screen times
- Decreased time outdoors

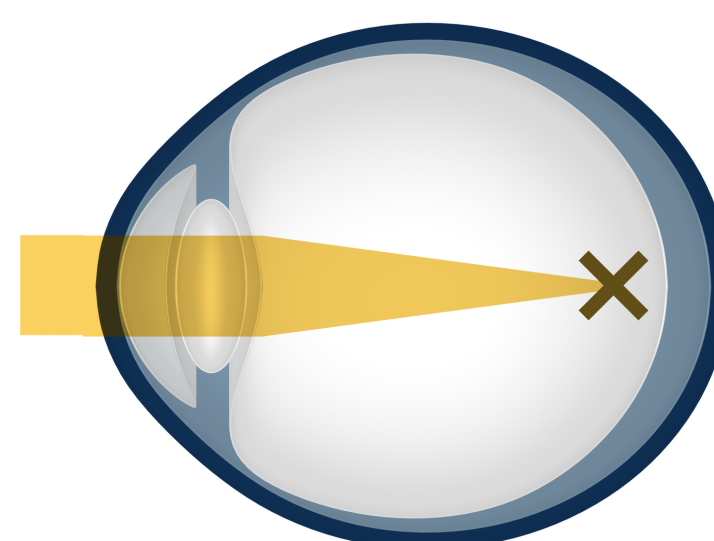
*Early intervention through a comprehensive eye exam can greatly improve long-term visual health.*



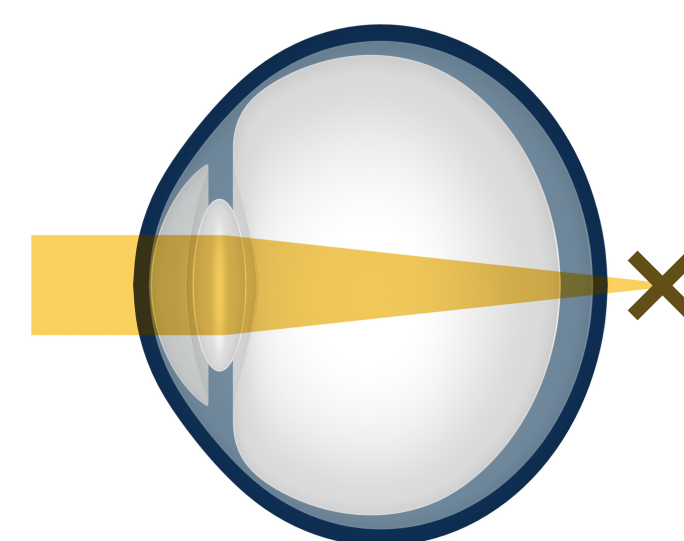
NORMAL EYE



ASTIGMATISM



MYOPIA



HYPEROPIA

*For more information about refractive error correction, book an appointment today.*

# Refractive Errors & Myopia Control



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## What are my treatment options?

Prescription glasses and/or contact lenses are standard options used to correct refractive errors.

Specific to myopia management:

- **Ortho-K, Soft Multifocal Contact Lenses (Abiliti, Misight)**
  - Ortho-K involves the use of fitted contact lenses at night to gradually reshape the cornea in order to correct vision.
  - Soft multifocal contacts contain multiple prescriptions in a single lens in order to correct vision at multiple distances.
- **Myopia Control Glasses (MiyoSmart, Stellest)**
  - Myopia control glasses refocus peripheral light in order to reduce the growth of the eye, thereby slowing the progression of myopia.
- **Atropine drops (0.025%–0.05%)**
  - Atropine is a multipurpose eye medication. In low concentration, atropine eye drops have been shown to slow the progression of myopia.

For patients not satisfied with their refractive error correction through traditional management, there are various options for surgical refractive correction once they are stable and of age.

Depending on your age and anatomy, options include:

- **Laser Vision Correction (LVC):**
  - Utilizes advanced laser technology to reshape the cornea, improving visual acuity and reducing reliance on glasses or contact lenses for clearer vision.
- **Implantable Collamer Lens (ICL):**
  - Utilizes a specialized lens implant that is inserted into the eye to correct a range of refractive errors, providing improved vision quality while preserving the natural lens.
- **Refractive Lens Exchange (RLE):**
  - Involves replacing the eye's natural lens with an artificial lens, effectively addressing refractive errors and potentially eliminating the need for glasses or contacts, resulting in improved visual clarity.