Dr. Barry Leonard and Associates
www.drbleonard.com
818-891-6711
Fax 818-891-5272

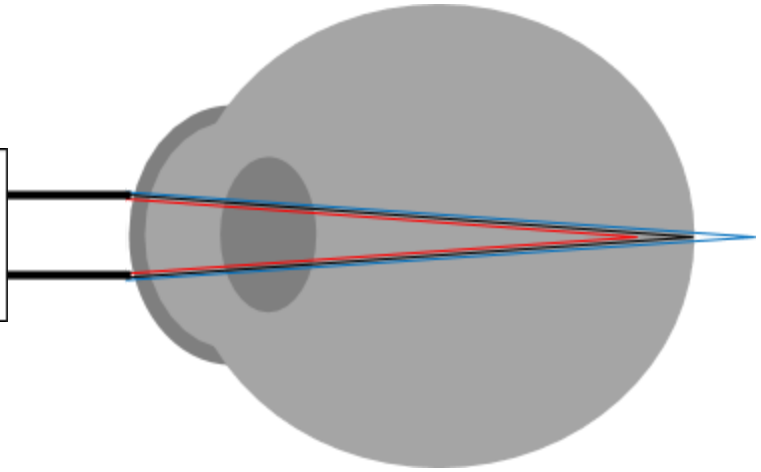
Myopia Control for Children and Teens:

Patient Information, Fees, and Informed Consent for Treatment

What is Myopia?

Myopia is the refractive error that results when an imbalance of the eye structures responsible for creating an accurately positioned focal point of a faraway object (corneal power, lens power, and eyeball length) causes this point to be focused in front of the retina instead of on the retina. Myopia is also known as "near sight", because when an object is brought nearer to the eye, the focal point moves back toward the retina until at some point (depending on the amount of myopia) the near object becomes focused on the retina without any effort from the focusing muscles, and the person has "near sight".

Figure 1:
(Central) Myopia = focus point in front of the retina
(Central) Emmetropia = focus point on the retina
(Central) Hyperopia = focus point behind the retina



What Causes Myopia Progression?

As children grow, their eyeballs can become larger and longer. This will cause the focal point of a faraway object to become located further and further in front of the retina, creating the need for stronger and stronger eyeglass prescriptions.

What is Myopia Control?

Myopia Control is the term describing the treatment methods used to slow down or stop the progressive loss of far vision in children by preventing the eyeball from growing too long.

Why Are More and More Parents Having Their Children Undergo Myopia Control Treatment?

Myopia has become an epidemic throughout the world. Besides the loss of far vision, there are increased eye health risks as a result of having eyeballs that are too long. As more and more studies show the efficacy and safety of myopia control treatment, controlling myopia has come to be viewed as more of a necessity than an elective luxury by eye care professionals and educators and parents.

Why Haven't I Heard of This Before?

Unfortunately, most eye care has turned into "fast-food" national commercial optical retail stores, whose main concern is how many "customers" can be crammed in and how many pairs of eyeglasses can be sold. The doctors who work there do not have the knowledge or specialized training to perform Myopia Control, and for them it is "too time consuming". Ophthalmologists are surgeons who have little or no knowledge of or interest in Myopia Control. Instead of trying to prevent their

patients' eyes from worsening, they actually contribute to the myopia epidemic by prescribing single vision eyeglasses and contact lenses for their young patients. If they ever tell you "ortho-k doesn't work" or "your child doesn't need bifocals", it is because they are unaware of the latest research.

Myopia Has Become a Worldwide Epidemic

Incidence of Myopia in Different Countries:

- USA = 42% of the population in 2010 (doubled from 1972)
- Europe = 35% of the population in 2010
- China and other Asian countries = 80% and increasing rapidly.
- Worldwide = 1.45 billion (25% of population) in 2010 with estimated 2.5 billion (33% of population) by 2020.

Predictive Factors in Myopia Progression

- Myopic parents have more myopic children than do non-myopic parents, but genetics play far less of a role than previously thought.
- The amount of reading or near work a person does is **NOT** a predictor of myopia! (Surprise!)
- People in urban environments have more myopia than rural or primitive societies.
- Lack of time outdoors in bright natural light is a predictor for myopia progression.
- **Peripheral hyperopia is a STRONG predictor of myopia progression.**

Why Should We Care if Our Children Develop Myopia or If It Gets Worse Every Year?

"They can just keep getting stronger and stronger glasses and contact lenses, right?"

"Sure, their lenses will keep getting thicker and thicker, but they'll still be able to see OK with a stronger Rx, right?"

"So, what's the big deal?"

Myopia is a Risk Factor for Cataracts, Retinal Detachment, Macular Degeneration, and Glaucoma

At -3.00D of myopia, the risk of posterior subscapular cataract is **3X** that of an emmetrope, and the risk of retinal detachment and myopic maculopathy is **9X** that of an emmetrope. Once children reach -5.00D of myopia, they have a **5X** greater risk of cataracts, a **21X** greater risk of retinal detachment, and a **40X** greater risk of myopic maculopathy. These ratio risks demonstrate that there is no physiological level of myopia that could be considered "safe" in comparison to emmetropia.

Myopes have a **2-3X** higher risk of developing glaucoma.

What Can Be Done to Prevent My Child's Vision from Getting Worse?

Current Treatment Options for Myopia Control

1. Low concentration 0.01% atropine eye drops (currently considered an "off-label" use by FDA)
2. More time spent outdoors in bright natural light
3. Bifocal (soft or rigid gas permeable) contact lenses (far-center/near-periphery)
4. NaturalVue® small aperture, aspheric progressive multifocal soft daily disposable contact lenses
5. Ortho-K

1. Atropine eye drops

These are normally used to dilate the pupil and temporarily paralyze the focusing muscles to reduce the eye pain from uveitis (inflammation of the middle layer of the eye, which

includes the choroid, ciliary body, and iris). Because research suggests that focusing fatigue is linked to nearsightedness in children, investigators have tried using topical atropine to disable the eye's focusing mechanism to try to control myopia. Studies have shown atropine eye drops to produce a large reduction in myopia progression in the first year, but after that the myopia control effect wears off. Also, when the drops are discontinued there is a fast rebound effect which leaves children considerably more nearsighted than when they started the drops.

2. More time spent outdoors

Many studies have shown the benefits of bright outdoor light in developing normal vision (emmetropia) as well as decreasing myopia progression. Send your kids outside to play at least 1-2 hours per day!

3. Soft bifocal contact lenses (center = far / periphery = near)

Studies have shown that a center-far, periphery-near concentric soft bifocal contact lens can achieve some degree of myopia control. However, due to the relatively low amounts of bifocal "ADD" powers available (up to +2.50), and the even lower amounts that can usually be tolerated before the patient's distance vision is severely compromised (typically +1.00 to +1.50), there is typically not sufficient peripheral myopia created to counteract the peripheral hyperopia that causes eyeball elongation and myopia progression.

4. NaturalVue® multifocal daily disposable contact lenses

Due to the unique aspheric optics, very large amounts of "ADD" power create the peripheral myopia needed to counteract the peripheral hyperopia, thereby preventing the eyeball from growing longer and becoming more myopic. This lens can even provide satisfactory visual acuity when there is 1.0 D of astigmatism present. Because of the large amounts of "ADD" power created, even with low amounts of myopia, we may begin using the NaturalVue® lens as first choice for our youngest kids who are just starting to become myopic.

5. Ortho-K night wear retainer contact lenses

Ortho-K is the controlled re-shaping of the cornea to eliminate refractive error by using specially designed rigid gas permeable contact lenses worn overnight and removed upon waking, providing clear unaided visual acuity for all waking hours.

When used for myopia control, Ortho-K lenses are specifically designed with a central smaller optic (treatment) zone so that the emphasis is on creating a larger area of peripheral myopia to counteract the peripheral hyperopia, thereby preventing the eyeball from growing longer and becoming more myopic.

Ortho-K lenses for myopia control have been shown over and over and over again in study after study after study for many years to be the best method for reducing the long-term progression of nearsight in children. ISEE and CRT lenses, in particular, because of their incredible customizability, can be designed to maximize the reduction in myopia progression.

ORTHO-K NIGHTWEAR

Fees for MYOPIA CONTROL with Custom Ortho-K Nightwear Retainer Contact Lenses

Our initial fee for Ortho-K Myopia Control is based on the level of complexity and anticipated difficulty. WAVE lenses are custom made for each patient, so payment is required before ordering.

Basic Levels of Complexity:

Tier I: Myopia ≤ -3.75 D	= $1,600
Tier II: Myopia -4.00 to -6.25 D	= $1,700
Tier III: Myopia -6.50 to -8.75 D	= $1,800
Tier IV: Myopia -9.00 to -11.25 D	= $1,900
Tier V: Myopia ≥ -11.50 D	= $2,000

TOTAL INITIAL FEE = $_____

YEARLY MYOPIA STATUS EVALUATIONS:

Myopia Control is NOT "one time treatment and then we're done", but should be considered as an ongoing treatment until the eye stops growing and the vision stops changing, usually by age 23-25. Myopia Control is NOT merely about your child not having to wear glasses during the day, **but about trying to prevent their eyeballs from growing to the point where they are at much higher future risk for developing such serious eye diseases as glaucoma and retinal holes, tears, and detachments.**

We promise to be as committed to your child's success as you are, so we will remind you when it is time for your child's yearly eye examinations, myopia status evaluations, and lens replacements.

NATURALVUE®

Fees for MYOPIA CONTROL with NaturalVue® Soft Daily Disposable Lenses

Initial Evaluation/Fitting/Follow-ups x 1 year	$ 500
Supply of NaturalVue® lenses (1 year = Eight (8) 90-packs)	$ 800
TOTAL 1st Year =	**$ 1,300**
Subsequent Yearly Evaluation/Fitting/Follow-ups x 1 year	$ 250
Supply of NaturalVue® lenses (1 year = Eight (8) 90-packs)	$ 720
TOTAL Subsequent Years =	**$ 970**