

# Pediatric Myopia

## Early Identification and Treatment Can Prevent Long-Term Vision Problems

If your child can see nearby objects clearly, but objects in the distance appear blurry, it indicates a common vision disorder called myopia, a medical term for nearsightedness. Your first action might be ordering a pair of prescription eyeglasses and hoping that solves the problem. However, you may not be aware that highly effective treatments for stabilizing or improving pediatric myopia are available at Bascom Palmer, reducing the risk of severe vision problems in your child's future.

"We have many treatments to slow down the progression of myopia, but we cannot reverse it," said Susanna Tamkins, O.D., pediatric optometrist and vision research scientist. "The trick is to catch myopia when it is just starting and begin treatment immediately to prevent it from worsening."

For more than 30 years, Tamkins has been helping families find the best solution for treating their children's myopia, including

special eyedrops and contact lenses. Along with her expertise in treating pediatric myopia, her guidance and support have helped parents from throughout South Florida and worldwide. She says, "I love being a pediatric eye doctor because I can make a difference in a child's vision that lasts a lifetime."

### Management of Myopia

Myopia clinical services for children of all ages, including infants, are available at Bascom Palmer in Miami and Coral Gables, including eye examinations, cutting-edge care such as axial length tests (measures of eye length), genetic testing, and state-of-the-art vision treatments.

"Parents should not wait until a child can sit up and read the letters on an eye chart," said Tamkins, the service director. She recommends a pediatric eye exam between the ages of 13 and 18



months, particularly if there is a family history of myopia. "Traditional vision screenings at school or a pediatrician's office only measure distance vision clarity and can miss early-onset myopia or other vision problems."

Families benefit from the multidisciplinary team, which includes retinal specialists, geneticists, pediatric ophthalmologists, developmental pediatricians, and a full spectrum of pediatric medical specialists. "A collaborative approach is extremely important when assessing a young child's vision because myopia may be associated with other vision or developmental issues," said Tamkins. "That's one of the reasons so many parents turn to Bascom Palmer for full spectrum coordinated care. We treat the child and the child's family, not just vision."

### Effective treatments

As a child grows, the globe of the eye also grows, elongating and changing the way light focuses on the retina. Normal growth results in normal vision, but distant objects appear blurry when the eye becomes too long, creating myopia. A popular saying among pediatric eye doctors is, "every diopter counts." This means that for every step higher your child's eyeglass prescription grows, there is increased vision blur and an increased risk of severe vision problems as an adult, including cataracts, glaucoma, retinal detachments, and macular degeneration. "This is the most important reason to seek treatment as soon as possible."

"Traditional eyeglasses and contact lenses resolve your child's vision blur. However, they are not enough. They do not stop the elongation of the eyeball and



Dr. Susanna Tamkins

thus do not stop the increase of myopia,” said Tamkins. Any child prescribed traditional eyeglasses for myopia is also eligible for treatments to slow the progression of myopia and prevent thicker eyeglasses. “Our clinic offers critical treatments that successfully slow or halt the growth of the eye, preventing myopia from getting worse.”

For many years, Tamkins has been treating pediatric myopia patients with eye drops containing low doses of atropine, an ophthalmic medicine used to expand the pupil for retinal exams and treat amblyopia (lazy eye.) Very low dose atropine is proven to be effective in slowing the progression of myopia, as evidenced in hundreds of research investigations as well as in clinical practice. Typically, these eye drops are administered each night before the child goes to bed and can be tapered off or discontinued as the child reaches physical maturity. Regular eye exams are needed throughout the treatment period.

Another treatment for pediatric myopia involves special contact lenses that selectively defocus peripheral retinal areas. Tamkins says soft MiSight® lenses – approved by the U.S. Food and Drug Administration (FDA) in 2020 – have stopped the progression of myopia for most patients who qualify for this treatment. “In my opinion, any child wearing traditional contact lenses should be changed to a contact lens that manages myopia,” she says. “Peer-reviewed data also supports myopia management with Essilor Stellest and Hoya MiyoSmart eyeglass lens designs, which are approved in other countries and are currently awaiting FDA approval in the United States,” she said. “There is a myopia treatment that fits the needs of every child and family. Being able to offer individualized treatments for each child is one of the big advantages of our myopia service.”



### Reducing future risks

Treating myopia early can help lower the possibility of more severe vision problems later in life. “Myopia is a well-established risk factor for several types of glaucoma, including primary open angle glaucoma and pigmentary glaucoma,” said Ta Chen “Peter” Chang, M.D., a professor of clinical ophthalmology and specialist in glaucoma and pediatric glaucoma. “While most risk factors for glaucoma, such as family history and age, are not modifiable, myopia prevention strategies – if acted upon early – can effectively decrease one’s glaucoma risk decades later.”

Myopia can also increase the chances of retinal problems, according to Audina “Nina” Berrocal, M.D., professor of clinical ophthalmology, retinal disease and pediatric retina specialist, and holder of the Johnstone Horvitz Chair in Ophthalmology. “We have young patients with myopia who come in with an obvious retinal detachment in one eye,” she said. “However, there might also be a low-lying detachment in the other eye that should also be treated.”

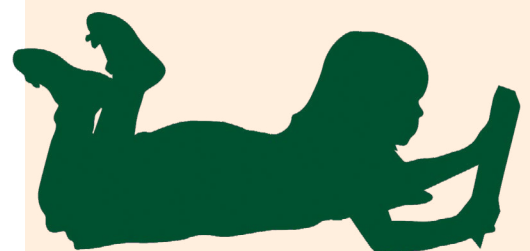
## A Growing Worldwide Problem

Pediatric myopia is a growing global problem, according to the World Health Organization (WHO), which estimates that 50 percent of the world’s population will be myopic by 2050.

Young children with early onset vision impairment, including uncorrected high myopia, will experience delayed development in language, emotions, and cognitive function, resulting in lifelong consequences, said a WHO report. School-age children with uncorrected high myopia may also struggle with educational achievement.

“Both genetic and environmental factors can contribute to myopia,” according to Dr. Susanna Tamkins. “If one parent has myopia, there is a 25 percent chance that a child will develop myopia, and if both parents are myopic, the chance rises to 50 percent.”

Other factors driving the increase in pediatric myopia include greater time spent indoors and staring at a smartphone, tablet or laptop screen. Research has shown that when school-aged children spent seven or more hours a week using computers or playing smartphone video games, their risk for myopia tripled.





# Advice for Parents

Parents should schedule a vision examination with a pediatric eye specialist when their child is between 13 and 18 months and follow up with annual vision screenings.

For school-age children, signs of pediatric myopia may include sitting near and directly in front of the TV, holding a book close to the face, or having difficulty seeing words on a classroom blackboard or whiteboard. Other symptoms include eyestrain, headaches, and squinting. Unfortunately, a child has already developed myopia when these symptoms are observed.

- Spend at least two hours a day outside, as sunlight exposure lowers the risk of nearsightedness, and your child will focus on distant objects such as a basketball hoop, a thrown ball, or friends playing.
- Spend less time on screens. If your child is on a screen, have them observe the 20-20-20 rule: Take a 20-second break to view something 20 feet away every 20 minutes.



## More screen tips:

- Use larger screens whenever possible.
- Mirror a smartphone to a television screen.
- Use a large-screen desktop computer instead of a tablet for school work.
- Play video games on a TV instead of a phone or tablet.



Berrol advises parents to take proactive steps to protect the vision of a child with high myopia. “Be conscious about the sports you allow them to play, and avoid contact sports that result in facial injuries. That’s another reason for diagnosing myopia as early as possible.” Genetic testing can help parents assess the risk of inheriting myopia or another vision problem. A pediatric eye specialist can also detect conditions that might not appear on a traditional vision screening, added Berrol. For instance, the two eyes might have significantly different levels of myopia or astigmatism. “It’s best to test by age two,” she said. “Once they are in their teens, you can not improve their vision.”

## A family’s journey

Treating their sons’ pediatric myopia has been a family priority for Midhat and Gretchen Abdulreda. Both Alli, age 14, and Sammy, age 12, have benefited from the state-of-the-art treatments offered by Bascom Palmer’s management of myopia clinical services.

“Dr. Tamkins has used different strategies with our two boys,” said Midhat Abdulreda, M.S, Ph.D., associate professor at the Miller School’s Diabetes Research Institute. “Alli now wears special MiSight contact lenses, which have stabilized his vision,” he said. “For Sammy, she advised the atropine drops, which have actually improved his vision. Our hope is to prevent further progression in both cases.”

Abdulreda said Alli was diagnosed with myopia in fourth grade. “We noticed he was misspelling vocabulary words copied off the blackboard,” he said. “He was sitting toward the back, and when his teacher moved him to the front of the room, the mistakes diminished. That’s when we realized he had vision issues.”

After Alli as examined at Bascom Palmer and picked up his glasses from the optical store, he was immediately able to see things in the distance. "It was a great moment as we were driving home, when he told me, 'Dad, I can see the highway now,'" Abdulreda said.

When Sammy began making spelling mistakes in school and getting headaches after playing baseball, the Abdulredas brought him in for vision testing. "He had been focusing so much on the ball, that he was getting bad headaches after the games," Abdulreda said. "After using the atropine drops, Sammy's headaches went away because he was seeing things better."

### Researching new treatments

Throughout her life, Tamkins has been interested in treatments for nearsightedness. "I have five sisters, all with varying amounts of myopia that progressed from early childhood into adulthood," she said. "When we were children, we were prescribed eyeglasses or contacts with stronger prescriptions that grew as we grew. Now that we are adults, I see their struggles with vision caused by this previously thought benign problem."

Tamkins has seen a pattern of progressive eye problems in her young patients as they mature. "Many adult patients with high myopic prescriptions have difficulties with reading and night driving. Some have been forced to change careers because myopia caused retinal thinning, and they could no longer see well enough to perform their job,"

she said.

Drawing on those personal and professional experiences, Tamkins is dedicated to finding leading-edge treatments to save her patients' vision. As director of Bascom Palmer's pediatric vision research program for more than 20 years, she focuses on research projects that are safe and have the potential to enhance existing treatments.

"We strive to be on the frontline of clinical care while building our myopia research program," she said. "We plan to

investigate the roles of genetics, the natural history of myopia, and innovative combination treatments. In the meantime, we will continue to offer state-of-the-art personalized care to children and families throughout South Florida and beyond." ■

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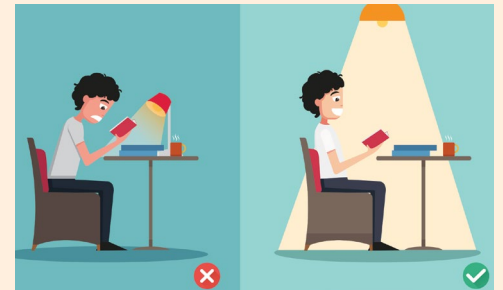
— Dr. Susanna Tamkins

## Tips for Kids

Wear sports goggles for baseball, softball, soccer, basketball, or racquet sports.



Turn on the lights when it gets dark – especially if you are reading.



Tell your teacher if you can't see the black or whiteboard or the writing looks blurry.



Play outside whenever you can, but never look directly at the sun.

Give your eyes a break when watching TV or playing games on your phone or computer. Every 20 minutes do some fun eye exercises: blink ten times, roll your eyeballs in circles, look to the right and left, and then at something far away.

