The Foreseeable Future

Seeing the smile on a child’s face after putting on a pair of glasses was the best part of her involvement in the Baltimore Reading and Eye Disease Study (BREDS), says Wilmer pediatric ophthalmologist Megan Collins, M.D., M.P.H. A collaboration between faculty from Wilmer’s Dana Center for Preventive Ophthalmology and the Johns Hopkins School of Education, BREDS examined the effects on reading scores of prescribing and providing glasses to children in Baltimore City schools.

During this study, the BREDS team worked with approximately 300 students in 12 schools.

Her most recent project, Vision for Baltimore—a partnership between Johns Hopkins, the Baltimore Health Department, Baltimore City Public Schools, Vision To Learn, Warby Parker and private foundations and philanthropists—is exponentially more ambitious. The program’s goal is to bring eye care directly into all the public elementary and middle schools across the city. Working with 50 schools and 20,000 children per year, the people powering the Vision for Baltimore program estimate they will accomplish this goal in three years.

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Connecting the Dots in Tissue Disorder Research

WILMER’S NEW PEDIATRIC OPHTHALMOLOGIST
Jefferson Doyle, M.D., Ph.D., M.H.S., came face to face with his future profession at 3 years old. “I tripped and fell through a glass door, lacerating my nose and face. I needed extensive reconstructive surgery,” he explains. “After that, I developed an eye turn and saw a fantastical ophthalmologist for many years who made a lasting impression,” says Doyle.

He credits this formative experience as a factor in his decision to become a pediatric ophthalmologist—but not the only one. “I thought what better area than pediatrics, where you can keep a working functional knowledge of all aspects of the eye,” Doyle says.

His area of research—connective tissue disorders (CTDs)—affects multiple parts of the eye, including the cornea, lens, retina and sclera (the white of the eye). Doyle is a master of connective tissue. “I want to be a teacher to explain connective tissue to his patients,” he says. “A building is made up of bricks, just like tissue is made up of cells. Connective tissue is the cement in between cells that holds them together,” he says. “I love genetics, the eye and the rest of the body,” says Doyle. “And I love working with the kids. It brings a smile to my face every day, and hopefully sometimes to theirs too!”

Jefferson Doyle in an exam room at the Wilmer Eye Institute

Doyle chose to focus on the CTD Marfan syndrome because of its ocular complications, including dislocation of the crystalline lens and excessive elongation of the eye, both of which can cause severe nearsightedness. The excessive growth can also cause patients’ retinas to tear and detach, all of which can lead to visual impairment or blindness.

Because Marfan syndrome is a systemic disorder, it also affects other organs in the body. “The most common cause of death is aortic rupture,” says Doyle. “The aorta dilates too much—which results in aneurysm formation—and just like an over-expanded balloon, it can burst.” This was historically thought to be due to an inherent weakness in patients’ aortas.

If the problem is a weakness in the tissue, limited treatment options exist. In a discovery that Doyle calls seminal, however, his colleagues at Johns Hopkins showed that aneurysm progression in Marfan syndrome occurs because the Marfan genetic mutation triggers an abnormal growth process in the aorta.

By targeting this process, they were able to develop a new medical treatment for the disorder. Since this discovery, Doyle has co-authored a series of research papers with these colleagues, which have shed further light onto the mechanisms driving Marfan syndrome, and related CTDs, and have led to the identification of several new therapeutic strategies.

Doyle is now looking to map his research in the cardiovascular system onto the eye. As with the aorta, doctors had assumed that lens dislocation, eye elongation and retinal detachment in Marfan syndrome occur because of a structural weakness of ocular tissues. “Maybe, though, they result from a fundamental dysregulation of eye growth—which we want to therapeutically target,” says Doyle. “It’s an exciting time for CTD eye research.”

Doyle sees patients with CTDs as well as a range of other genetic conditions that affect the eye. “I love getting to integrate my knowledge of genetics, the eye and the rest of the body,” says Doyle. “And I love working with the kids. It brings a smile to my face every day, and hopefully sometimes to theirs too!”

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health of Baltimore’s youth. Collins and her colleagues were finishing BREDS and were able to apply the knowledge they had gained toward making Vision for Baltimore a success.

While BREDS was a research study, Vision for Baltimore is a school-based public health program. Collins cites the critical link between health and academics as one reason for a recent shift toward school-based health care in some high-poverty cities. “Children who can’t see, can’t hear or can’t breathe are going to struggle in school,” says Collins. “Many families do not have the time or resources to take their child to an eye doctor in the community. So, why not bring the eye doctor directly to the school instead?”

The vision for Baltimore program includes vision screening for all Baltimore City Public School students in pre-kindergarten through eighth grade. If a student fails a screening, Vision for Baltimore offers school-based eye exams. Once a parent or guardian signs a consent form, a child can see an eye doctor who comes to his or her school in a mobile vision clinic. An optometrist from the nonprofit Vision To Learn performs an eye exam and determines whether the child needs glasses. If so, the child can pick out the frames in a mini optical shop within the mobile clinic. The prescriptions are sent to Warby Parker, which donates all the eyeglasses for the program. The Vision To Learn optician returns a few weeks later to distribute the glasses and fit them on each child.

The strategies developed with Vision for Baltimore have become a springboard for a similar project in another city: Vision for Chicago, which is a study measuring the impact of glasses on academics and the impact of a professional development program on teacher engagement.

Teachers are key allies in making Vision for Baltimore and Chicago successful. “We are trying to incorporate vision care into the culture of schools so that teachers will ask, ‘Are you in your seat? Do you have your glasses on?’” says Collins.

Announcement:
The Wilmer Eye Institute is the 2018 Readers’ Choice Winner for Best Pediatric Vision Care in Baltimore’s Child magazine.
I provide information about clinical issues should you each delighted to discuss our current projects or to and will be highlighted in a future issue. Dr. David to our mission in clinical care, research and teaching to join the Wilmer clinical faculty. Each of these division faculty, I have been fortunate to be able to these pilot projects, which we hope leads to larger, the Discovery Fund provide the necessary support for beyond what a clinical practice can sustain, making initially require internal resources (time and grants) you will see, their work ranges from improving of Drs. Megan Collins about the research work by the articles in this issue scholarship, well-illustrated and Johns Hopkins are opportunities at Wilmer of eye problems. The work at Wilmer and for Best Pediatric Vision Care in magazine. Teachers are key allies in making Vision for which donates all the eyeglasses for the program. The Vision To Learn optician returns a few weeks later to measure the impact of a professional development program on another city: Vision for Chicago, which is a study by targeting this process, they aneurysm progression in Marfan syndrome occurs because the Marfan genetic mutation triggers an abnormal growth process in the aorta. For Doyle, as a teenager, his best friend had a heart problem, which led him to decide to pursue a career in medicine. His area of research—connective tissue disorders (CTDs)—affects multiple parts of the eye, including the cornea, lens, retina and sclera (the white of the eye). Doyle was a child who needed glasses and therefore became passionate about providing eye care to children in need. After completing medical school and a residency in ophthalmology, Doyle founded Vision To Learn, a non-profit organization that provides free eye exams and glasses to children who cannot afford them. In the past 15 years, Vision To Learn has provided eye exams and glasses to over 1 million children in the United States and several other countries. The organization has received numerous awards and recognition for its work, including the 2019 National Award for Vision Health from the American Academy of Ophthalmology. Doyle believes that everyone, regardless of their background or circumstances, deserves access to proper eye care. He is committed to making sure that children have the opportunity to see clearly so that they can reach their full potential. Doyle is a beacon of hope and inspiration to those who have seen the impact of his work firsthand. He continues to be a driving force behind Vision To Learn, ensuring that the organization continues to grow and evolve to meet the needs of the children it serves. In the future, Doyle hopes to expand Vision To Learn's work to other countries and to develop new initiatives that will further improve access to eye care for children around the world.
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