



VISION PROGRAM

VISION PROGRAMMING,
COMMUNITY PARTNERSHIP AND
CREATING A VISION HOME

RUTH
AND
NORMAN
RALES

**Rales
Center**

for the Integration
of Health
and Education



JOHNS HOPKINS
CHILDREN'S CENTER

MARCH 2021

VISION PROGRAMMING, COMMUNITY PARTNERSHIP AND CREATING A VISION HOME



What did we do?

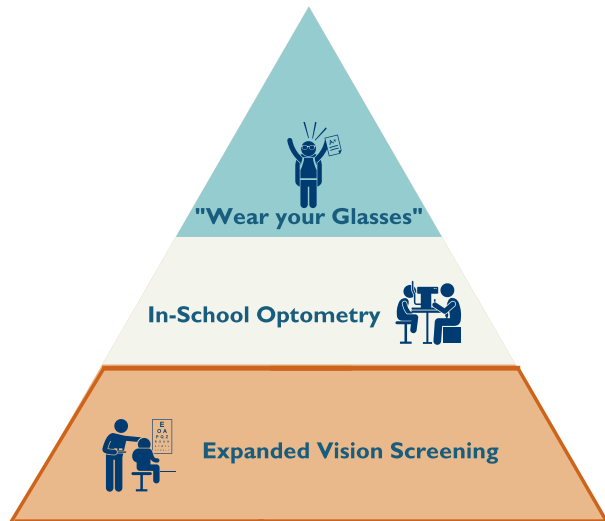
The Rales Vision Program, Glasses and Optometric Services for Eye health and Education (GOSEE) program increased access to a full range of vision screening and care in school by 1) expanding the frequency and scope of vision screenings; 2) reducing barriers to vision care by providing in-school optometry services and glasses; 3) developing a financially sustainable model for school-based vision care; and 4) developing interventions to promote eyeglass-wearing in the classroom.

Rationale

An estimated 20-25% of school-aged children in the US have a diagnosed vision difficulty [1-4] and vision problems disproportionately affect the learning of children from low income, urban areas [5]. Low income children are nearly twice as likely to have vision difficulties as higher income counterparts [6, 7]. Identifying and addressing vision problems is essential to school success. Poor eyesight is linked to poorer academic, social, and behavioral outcomes, headaches, eyestrain, lower engagement with reading, and poorer hand-eye coordination [8].

In Maryland, annual school-based vision screening is mandated for students in grades K, 1, and 8. In Baltimore City, screening is typically completed by a team from the Baltimore City Health Department (BCHD). The American Academy of Pediatric Ophthalmology and Strabismus (AAPOS) recommends that children have their vision screened every 1-2 years. For students who do not pass vision screening, additional follow-up is needed with an eye care provider to confirm findings and provide needed care. Despite Affordable Care Act mandates that all health insurance include vision care, barriers to receiving eye care remain including transportation and scheduling challenges [9]. In addition, parents often do not recognize their children's vision issues as a serious problem [10].

RALES GOSEE COMPONENTS AND IMPLEMENTATION



Part I: Expanded Vision Screening

Recognizing the potential for a student's vision problems to go undetected between 1st and 8th grades, in Years 1 and 2 of the Rales Model, we tested supplemental screenings for grades 3, 5, 6, and/or 7. In Year 3, we settled on additional screening for grades 3, 5, and 7.

GOSEE screenings were expanded to match AAPOS recommendations, including acuity, stereopsis, color vision, pupillary response, red reflex, and external examination. Specially trained Johns Hopkins School of Nursing and School of Medicine students assisted with screening. Screenings relied on an opt-out consent process; less than 7% of parents opted out in any year.

In addition to routinely-screened grades, students in other grades could be referred for screening by teachers because they were struggling with reading or because of a parent or teacher concern. The integration of the RHC team into the school facilitated ongoing conversations about students' learning and vision needs, something that is impossible for outside providers who are onsite for only a few days per year.

In Year 4, we began screening kindergarten students during a dedicated Whole-Child Kindergarten Intake Program (see Whole Child Kindergarten Intake Process Pilot report). While kindergarten students were still screened during the year by BCHD, screening before kindergarten entry allowed us to identify and address vision problems before students matriculated, setting them up for early school success.

Based on local and national estimates, we expected ~25% of students would not pass vision screening. In fact, we found that closer to half of students did not pass.

Vision Screening Results

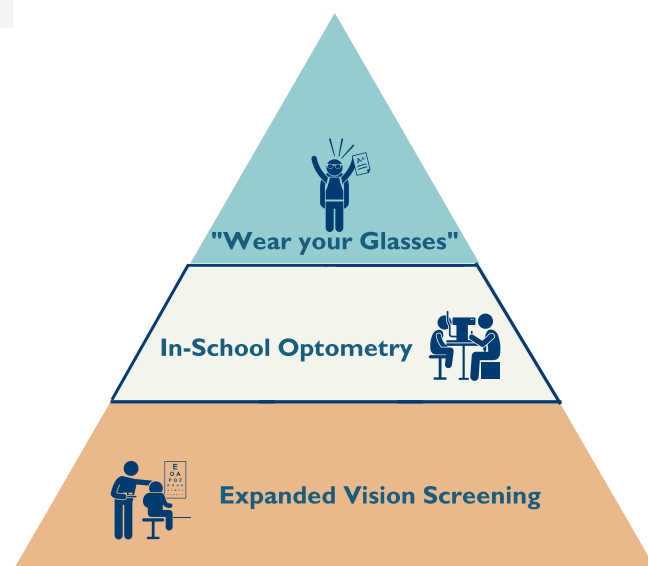
We observed that 42-56% of students did not pass vision screening in any given year. Rates were higher among students who were referred by teachers or parents for struggling with reading (an average of 61% did not pass in Harmony and 67% did not pass in Ujima).

Students received a letter to take home indicating whether they passed screening or were referred for additional follow-up. We found that, for many students, this was not the first time they were told they had a vision concern. Two-thirds of students who did not pass screening said they had previously been told they needed glasses; however, only about a third said they had glasses, and a quarter said they had a pair at school. Traditional school-based screening, therefore, was often not translating into vision correction.

	SY1516	SY1617	SY1718	SY1819
Whole Child Intake Process	--	--	--	52%
3rd grade	47%	50%	47%	56%
5th grade	45%	43%	42%	50%
6th grade	49%	--	--	--
7th grade	--	--	44%	48%

Part II: Optometry Events and Glasses Procurement

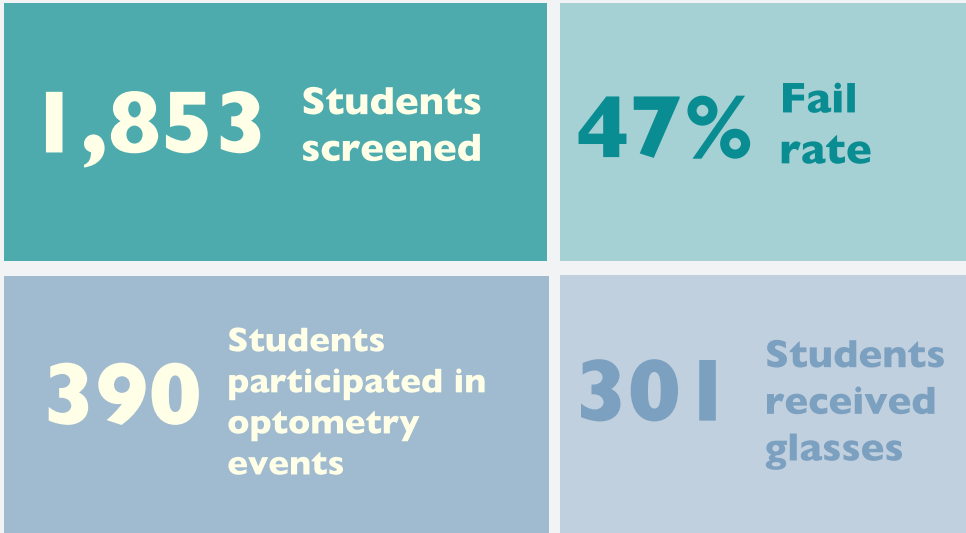
Previous research shows that programs that pair screening with free glasses are more successful in promoting eyeglass wearing than programs that provide prescriptions alone [11]. With this in mind, we worked to bring eye care into the school. In the spring of Year 1, RHC launched a two-day “Kids Vision First” event in partnership with the Maryland Optometric Association (MOA) and the Essilor Vision Foundation (EVF). Costs related to the event, including equipment rental and shipping, lab equipment and fees, and compensation for some professional time were supported by a donation. In-kind contributions from MOA and EVF supported most staffing costs and EVF provided glasses.



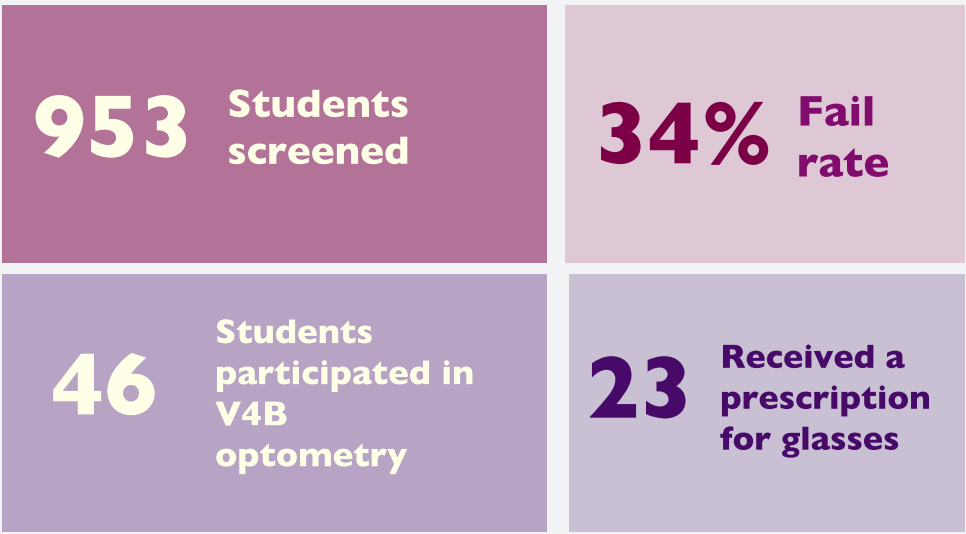
Students who did not pass screening received a consent form to participate in the vision event. Unlike screenings, written parental consent is required to receive optometric care. While essential to transparent, ethical, and family-centered care, return of consent forms remains a barrier to greater participation in school-based vision care (among other services). Rales Heath Center staff and teachers called families who did not return a consent form to follow up and encouraged them to participate. A summary of program participation is shown below.

Each student who needed glasses was provided with two pairs, one for home and one for school. A limitation of this first optometry program, however, was that eye exams did not include dilation, which sometimes necessitated additional off-site follow-up care.

Rales Health Center Vision Program *SY1516 to SY1819*



Vision for Baltimore *SY1819*



Note that differences in failure rates between RHC and V4B screenings are due to somewhat narrower screening in V4B and different grades screened.

Optometry Events, Continued

While we benefitted from the generosity and partnership of the MOA for our first vision event, we recognized the importance of a more sustainable strategy. Our goal was to partner with a local community provider that could bill students' insurance. In Year 2, we initiated a partnership with Adventure Dental and Vision, a Medicaid and Blue Cross Blue Shield optometry provider. Optometric exams performed by Adventure in school were identical to those in their community offices, including dilation; multiple events per year helped make sure that students received the necessary follow up appointments. In addition, students could receive services at Adventure's community-based offices, with case management from the Rales Health Center team if they needed additional care. When needed, one pair of glasses was billed to insurance and one pair was provided gratis by EVF's Changing Life Through Lenses program. EVF provided both pairs of glasses for students without insurance.



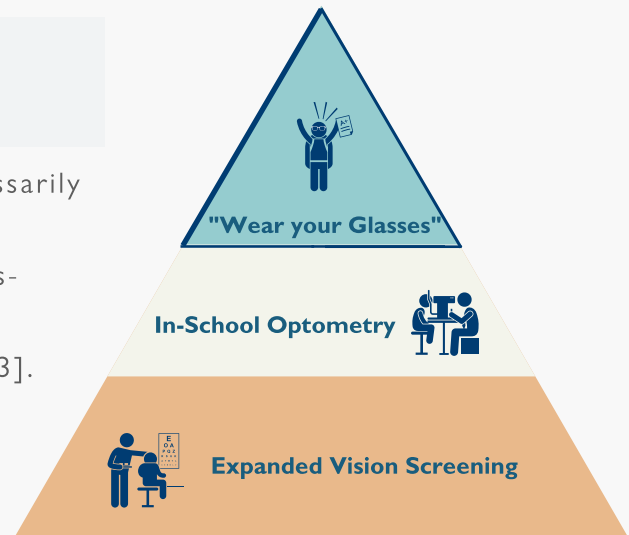
In Year 3, KIPP Baltimore was newly included in a partnership between the Baltimore City Health Department, the eyewear brand Warby Parker, and Johns Hopkins University, called Vision for Baltimore (V4B). V4B screens all students in the elementary and middle school grades every three years and provides mobile eye care services for those in need of follow-up. V4B provided exams to 953 students and 34% did not pass. V4B provided optometry services for 46 students (14% of failures). Adventure provided exams at KIPP for 55 students who did not access optometry services provided by V4B or a community provider.

In all years of the program, multiple supports were provided for students who wore glasses; replacement glasses were provided as needed for students whose glasses were lost or broken, and minor repairs were performed in the Rales Health Center.

Part III: Promoting Glasses-Wearing at School

Providing students with glasses does not necessarily mean that they will reliably wear their glasses. Several studies have demonstrated that glasses-wearing compliance remains low even when students receive free pairs of glasses [4, 12, 13].

To address this gap, we implemented a pilot program to evaluate a brief, low-cost glasses-wearing intervention in the elementary grades called “Wear Your Glasses.”



Wear Your Glasses Program Results



A total of 44 students across 16 classrooms were enrolled in this 3-month project. During the 3 months, a teacher and a member of the Rales staff recorded whether students were wearing their glasses and conducted 7,000 behavioral observations. During a one-month intervention phase, students were reminded to wear their glasses. They earned a sticker each day if they were wearing their glasses. At the end of the week, students who had 4+ stickers earned a small prize.

At baseline, 56% of students were wearing their glasses as prescribed; overall, adherence to glasses-wearing improved 17% (to 73%) during the first 2 weeks of intervention. The intervention was particularly effective for those whose who had below-average adherence at baseline (29% improvement); those who said their parent did not remind them to wear glasses (24% improvement); and those who said at the beginning of the intervention that they did not feel that wearing glasses improved their vision (29% improvement). There were significant improvements in observer-rated classroom behavior following the intervention. Academic engagement increased from 78% to 83%, respect increased from 87% to 91%, and disruption decreased from 22% to 18%.

Teachers also reported that Wear Your Glasses helped identify students who were supposed to be wearing glasses. For example, in one 1st grade classroom, 9 children appeared in class wearing glasses after the intervention started. This finding encouraged the teacher to reach out to parents about glasses-wearing. Some teachers decided to implement the sticker chart with other students, regardless of whether they were in the study, demonstrating feasibility and acceptability.

Part IV: Academic Impact of Vision Program

We investigated whether not passing vision screening was associated with poorer academic outcomes. We did not find support for differences in standardized test performance (PARCC English language arts (ELA)/math, Measures of Academic Progress (MAP) reading/math) by vision screening results. We also did not see statistically significant differences in test scores before and after students received glasses, although there was a trend toward higher PARCC ELA scores. The lack of significant association may be explained by the complex determinants of academic performance including family, teacher, and student factors that may be more influential than vision or vision correction. Students may not routinely wear their glasses as prescribed or may have developed compensatory mechanisms to address vision challenges (e.g., sitting near the board or increasing the font size on a computer screen).

Dissemination

- The GOSEE program was presented at the 2017 School Based Health Alliance Annual Meeting and the 2019 Johns Hopkins Consortium on School-Based Health Solutions School-Based Vision Care Symposium.
- Haag TM, Velazquez GC, Wiggins T, Johnson SB, Spin P, Connor KA. An intervention to improve adherence to glasses-wearing among urban public elementary school students: Associations with classroom behavior. In press: J School Nursing.

Impact

- In total, 1,853 students were screened in Years 1-4, 390 students received in-school optometry services (21%), and 301 students received glasses.
- We saw some promising trends toward better reading test scores among students who received glasses, but, overall, these changes are small.
- A pilot glasses wearing intervention was associated with an increase in glasses wearing from 56% to 73%, and small but statistically significant increases in classroom behavior and engagement. The findings suggest that school-wide efforts to encourage glasses-wearing could pay dividends for school climate.

"The screenings that are done, vision screenings, getting kids free glasses. I feel like if I had had these resources as a child, it would have changed my whole life, having grown up poor here in Baltimore, myself. All of those things are huge accomplishments."

- KIPP Staff Member

LESSONS LEARNED



- Vision challenges were much more prevalent than we expected; nearly half of students did not pass vision screening. Vision challenges are particularly prevalent among students identified as having low reading proficiency; approximately 2/3 of these students did not pass their screening, providing support for more frequent screenings.
- Partnering with a community provider allowed for more than 90% of eyecare services and one pair of glasses to be billed to a third-party payer, increasing financial sustainability of the program.
- Despite substantial outreach to families by RHC staff and teachers to advocate for participation in in-school vision events, many students were not served. This may be particularly true for families with high levels of competing social need and those unsure about their child having a vision issue, who may not see eye care as a priority.
- For the year that both mobile optometry services and community providers were offered, even when an outside group conducted screening, a larger fraction of parents elected to receive vision services at school.
- Raising the profile of glasses-wearing with teachers and offering small prizes for adherence is a promising way to improve glasses-wearing, classroom behavior, and engagement.
- While the proportion of students who did not pass vision screening was high, there were no statistically significant differences in standardized assessment performance by screening results or receipt of glasses.

REFERENCES

1. Ethan D, Basch CE, Platt R, Bogen E, Zybert P. Implementing and evaluating a school-based program to improve childhood vision. *J Sch Health*. 2010;80(7):340-5.
2. Zaba J. Children's vision care in the 21st Century and its impact on education, literacy, social issues, and the workplace: A call to action *Journal of Behavioral Optometry*. 2011;22:39.
3. Ferebee A. Childhood vision: Public challenges & opportunities, a policy brief. Washington, DC: The Graduate School of Education and Human Development, School of Public Health and Health Services, The George Washington University Medical Center; 2004.
4. Haag T, Calderon Velazquez G, Wiggins T, Johnson S, Spin P, Connor K. An intervention to improve adherence to glasses-wearing among urban public elementary school students: Associations with classroom behavior. *J School Nursing*. in press.
5. Basch CE. Vision and the achievement gap among urban minority youth. *J Sch Health*. 2011;81(10):599-605.
6. Centers for Disease Control and Prevention. Visual impairment and use of eye-care services and protective eyewear among children--United States, 2002. *MMWR*. 2005;54(17):425-9.
7. Gould MC, Gould H. A clear vision for equity and opportunity. *Phi Delta Kappan*. 2003;85(324-8).
8. Vision for Baltimore. Vision for Baltimore 2018 [Available from: <https://health.baltimorecity.gov/VisionForBaltimore>].
9. Gower EW, Silverman E, Cassard SD, Williams SK, Baldonado K, Friedman DS. Barriers to attending an eye examination after vision screening referral within a vulnerable population. *J Health Care Poor Underserved*. 2013;24(3):1042-52.
10. Kemper AR, Uren RL, Clark SJ. Barriers to follow-up eye care after preschool vision screening in the primary care setting: findings from a pilot study. *J AAPOS*. 2006;10(5):476-8.
11. Evans JR, Morjaria P, Powell C. Vision screening for correctable visual acuity deficits in school-age children and adolescents. *Cochrane Database Syst Rev*. 2018;2(2):Cd005023.
12. Preslan MW, Novak A. Baltimore Vision Screening Project. Phase 2. *Ophthalmology*. 1998;105(1):150-3.
13. von-Bischoffshausen FB, Muñoz B, Riquelme A, Ormeño MJ, Silva JC. Spectacle-wear compliance in school children in Concepción Chile. *Ophthalmic Epidemiol*. 2014;21(6):362-9



THANK YOU FOR YOUR SUPPORT

To Our Loyal Supporters

We are grateful to all those who have joined us in our mission to create models of school health that help every child to achieve their full health and academic potential. Special thanks to the Norman and Ruth Rales Foundation and our partners at KIPP Baltimore; without them this work would not be possible.

To learn more, please visit <https://ralescenter.hopkinschildrens.org/>

