2018 Jenny Pomeroy Award for Excellence in Vision and Public Health

--- moderator ---

Kathleen Murphy
DNP, RN, NEA-BC, FAAN
University of Texas Medical Branch, Chair, Prevent Blindness Public Health and Policy Committee
Jenny Pomeroy Award for Excellence in Vision and Public Health
2018 Jenny Pomeroy Award for Excellence in Vision and Public Health

Johns Hopkins University School-Based Eye Care Team
(Represented by Megan E. Collins, MD, MPH)
Hopkins School-Based Eye Care Team

David S. Friedman, MD, MPH, PhD
Dana Center for Preventive Ophthalmology, Wilmer Eye Institute, Johns Hopkins University School of Medicine

Michael X. Repka, MD, MBA
Wilmer Eye Institute, Johns Hopkins University School of Medicine

Robert E. Slavin, PhD
Center for Research and Reform in Education, Johns Hopkins University School of Education

Nancy A. Madden, PhD
Center for Research and Reform in Education, Johns Hopkins University School of Education

Amanda Inns, MEd
Center for Research and Reform in Education, Johns Hopkins University School of Education
Academic Consequences of Vision Impairment
A Simple Solution?
Recognizing Visual Impairment in Children

• Vision screening is the first indication of abnormal vision in 75% of kids < age 13
• 40 out of 50 states mandate vision screening for children
  – No set standard for state vision screening protocols
  – Marked variation in vision screening protocols by state
Maryland Vision Screening Mandate

Grade of first entry (Pre-K or K)
First Grade
Eighth Grade
Disparities in Access to Eye Care

- Vision screenings
- Eye exams
- Eyeglass wear and retention

Might need glasses.
Actually get glasses.
Concept of School-Based Care

• School-based health programs are a way to advance health equity

• Examples include:
  – Asthma
  – Oral health
  – Immunizations
  – Vision

• Better health = better educational outcomes
Baltimore Reading and Eye Disease Study (BREDS)

- School-based research program to study the impact of eyeglasses on reading achievement

- 12 Baltimore City Public Schools, 2014-2016

- Second and third grade students

- Vision and reading assessments at baseline, one year, and two years
BREDS Findings

- 33% of students reported previously worn glasses but only 6% still had them at the baseline assessment
- Most common ocular findings:
  - Refractive error (hypermetropia, myopia, and astigmatism)
  - Convergence insufficiency
- Glasses were prescribed for 194 participating students (61%)
- Children with uncorrected low-grade hypermetropia had lower scores on baseline reading assessments than children with emmetropia
After receiving eyeglasses, students had improved:

- Scores on individual reading assessments
- Distance and near visual acuity that was sustained over the 2-year study period

Over 80% of students wore their eyeglasses consistently and reported they were able to see and read more easily.

The factor most predictive of students wearing their eyeglasses was parents and/or teachers reminding them to do so.
Vision for Baltimore (V4B)

• Launched in Fall 2016
• 152 schools serving all Baltimore City Public School students in preK – 8th grade
V4B Process

1. Vision screenings for every student
2. Mobile vision clinic evaluation at school
3. Eyeglasses prescribed and dispensed at school
4. Eyeglasses replaced as needed
5. Long-term monitoring of eyeglasses use
V4B Research Study

- Evaluate the impact of school-based eye care on academic performance
- Develop school-based strategies to promote eyeglasses wear and to reduce the rate of lost or broken glasses
- Conduct a cost analysis of the short-term and predicted long-term economic impact of expanded vision screening and school-based vision care
- Perform ongoing process evaluation to identify implementation barriers and create a model of sustainability
V4B Vision Screening Protocol

- Performed by BCHD vision screening teams
- Screening components:
  - Distance visual acuity
  - Stereo E test
  - Cover test
  - Autorefraction
- A vision screening failure is defined as not passing ≥ 1 element of the assessment.
V4B Eye Exam Protocol

• Conducted by Vision To Learn optometrists
• Vision exam includes:
  – Distance visual acuity
  – Cover testing
  – Auto-refraction
  – Manifest refraction
  – Near acuity (based on symptoms)
• Slit lamp or penlight assessment of external/anterior segment
• Non-dilated fundus exam (optic nerve and macula) with direct or indirect ophthalmoscopy
# Warby Parker Eyeglasses

<table>
<thead>
<tr>
<th>Frame Style</th>
<th>Color</th>
<th>School Recommendation</th>
<th>Size</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller 100</td>
<td>Black</td>
<td>Elementary School</td>
<td>45-15-130</td>
<td><img src="image1.png" alt="Frame" /></td>
</tr>
<tr>
<td>Miller 607</td>
<td>Sky Blue</td>
<td>Elementary School</td>
<td>45-15-130</td>
<td><img src="image2.png" alt="Frame" /></td>
</tr>
<tr>
<td>Miller 609</td>
<td>Crystal Red</td>
<td>Elementary School</td>
<td>45-15-130</td>
<td><img src="image3.png" alt="Frame" /></td>
</tr>
<tr>
<td>Coy 352</td>
<td>Navy Blue</td>
<td>Mostly elementary, some middle school</td>
<td>46-14-130</td>
<td><img src="image4.png" alt="Frame" /></td>
</tr>
<tr>
<td>Rizzo 651</td>
<td>Light Pink</td>
<td>Mostly elementary, some middle school</td>
<td>46-17-145</td>
<td><img src="image5.png" alt="Frame" /></td>
</tr>
<tr>
<td>King 100</td>
<td>Black</td>
<td>Mostly elementary, some middle school</td>
<td>48-16-130</td>
<td><img src="image6.png" alt="Frame" /></td>
</tr>
<tr>
<td>King 651</td>
<td>Light Pink</td>
<td>Mostly elementary, some middle school</td>
<td>48-16-130</td>
<td><img src="image7.png" alt="Frame" /></td>
</tr>
<tr>
<td>Cook 352</td>
<td>Navy Blue</td>
<td>Mostly elementary, some middle school</td>
<td>48-17-135</td>
<td><img src="image8.png" alt="Frame" /></td>
</tr>
<tr>
<td>Ruthie 989</td>
<td>Rose</td>
<td>Both elementary and middle school</td>
<td>50-16-135</td>
<td><img src="image9.png" alt="Frame" /></td>
</tr>
<tr>
<td>Young 161</td>
<td>Dark Grey</td>
<td>Both elementary and middle school</td>
<td>50-16-135</td>
<td><img src="image10.png" alt="Frame" /></td>
</tr>
</tbody>
</table>
### Students Served to Date

<table>
<thead>
<tr>
<th></th>
<th>Students Screened</th>
<th>Failed Vision Screening</th>
<th>Eye Exams Completed</th>
<th>Eyeglasses Prescribed</th>
<th>Referrals for Further Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1 (9/2016 – 8/2017)</td>
<td>17,614</td>
<td>5,596</td>
<td>2,920</td>
<td>2,349</td>
<td>146</td>
</tr>
<tr>
<td>Year 2 (9/2017 – present)</td>
<td>17,464</td>
<td>6,172</td>
<td>3,121</td>
<td>2,385</td>
<td>59</td>
</tr>
<tr>
<td>Total</td>
<td>35,078</td>
<td>11,768</td>
<td>6,041</td>
<td>4,734</td>
<td>205</td>
</tr>
</tbody>
</table>

*Current as of June 11, 2018*
School Vision Advocates (SVAs)
Educational Programs for Teachers

HELP YOUR STUDENTS WITH THEIR GLASSES
TIPS FOR TEACHERS

VISION BALTIMORE 2016 - 2017
Educational Programs for Students
Incentives Program

- Target of 80% consent form return within 1 week
  - School supplies
  - All staff entered into raffle for $95 Warby Parker gift card
Vision for Chicago (V4C)

- 2-year research study launched in Fall 2017
- 80 schools enrolled
- Builds upon existing success of Chicago Vision Exam Program
  - Illinois Eye Institute (IEI) at Princeton Vision Clinic
  - Tropical Optical
  - Ageless Eye Care

**BLUE**: Intervention schools
**GREEN**: Control schools
V4C Study Objectives

1. Launch school-based educational campaigns and professional development programs to increase the use of school-based vision program and retention of eyeglasses
2. Evaluate the impact of eyeglasses on academic performance
V4C Intervention

School vision advocates work directly with school staff in intervention schools

Educational programs
- Signs of vision impairment
- Accessing school-based care
- Importance of wearing eyeglasses
- Maintenance / care of eyeglasses

Monitoring programs
- Eyeglasses counts and classroom observations
- Working with teachers to develop monitoring systems
# Program Distinctions

<table>
<thead>
<tr>
<th></th>
<th>Baltimore</th>
<th>Chicago</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student population served</strong></td>
<td>Students who fail a V4B vision screening assessment</td>
<td>Students who fail a CPS vision screening assessment plus students referred by parents/ teachers</td>
</tr>
<tr>
<td><strong>Refraction technique</strong></td>
<td>Non-cycloplegic</td>
<td>Cycloplegic</td>
</tr>
<tr>
<td><strong>Retinal and posterior segment exam</strong></td>
<td>Non-dilated</td>
<td>Dilated</td>
</tr>
</tbody>
</table>
| **Location**                  | Mobile vision clinic at school                                            | 1) School-based  
2) Princeton Vision Clinic (students travel to/from via school-bus) |
Challenges and Opportunities in School-Based Vision Care

- Building and maintaining trust with stakeholders
- Designing health education campaigns to increase awareness and utilization
- Changing the school culture to include vision as part of the educational mission
- Creating cost-effective models of school-based vision care delivery
- Optimizing communication in the doctor-patient-parent-teacher relationship
- Developing best practice patterns and connecting children with complex health needs to community providers
- Integrating health information into existing school technology platforms
Conclusions

• There is a substantial unmet need for pediatric vision care, especially in high poverty communities.

• School-based delivery of eye care is an intervention strategy to increase access to care.
  – Recognition of a vision problem and provision of eyeglasses is the first step.
  – Programs must also create an alliance between health professionals, educators, parents and students.

• Future research should be directed towards understanding implementation barriers and creating sustainable models of school-based eye care.
THANK YOU
to the Johns Hopkins team and program partners!
Special Thanks to Our Funders:

The Abell Foundation
Hackerman Family
Laura and John Arnold Foundation
Robert M. and Diane v.S. Levy Family Foundation
Johns Hopkins Urban Health Institute