Addressing Disparities in Pediatric Eye Care

Perspectives from 33 years in pediatric ophthalmology

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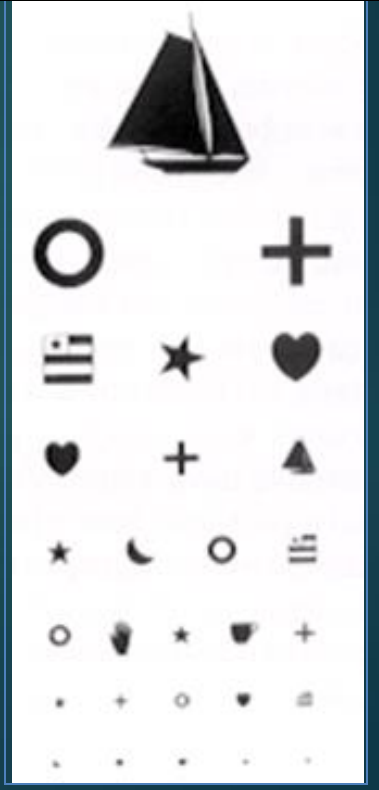
Progress

- Vision screening
- Collaborative work
- Legislative and Regulatory work
- Impact of vision on the whole child
- Programs to address disparities

Vision Screening Historical perspective

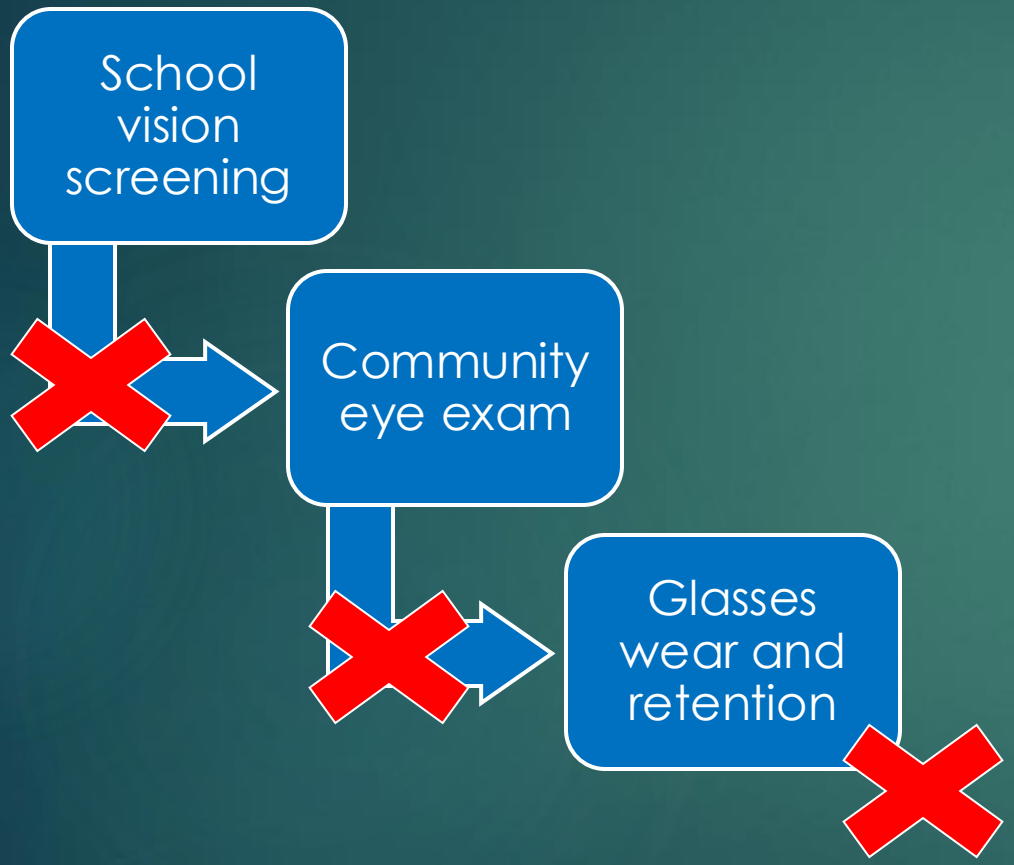
- Lack of standardization in community/school-based screenings
- No instrumentation
- Designed to detect conditions leading to irreversible vision loss – amblyopia, cataract, high refractive error
- No attention to refractive error or impact on learning
- Little attention to disparities in detection and treatment

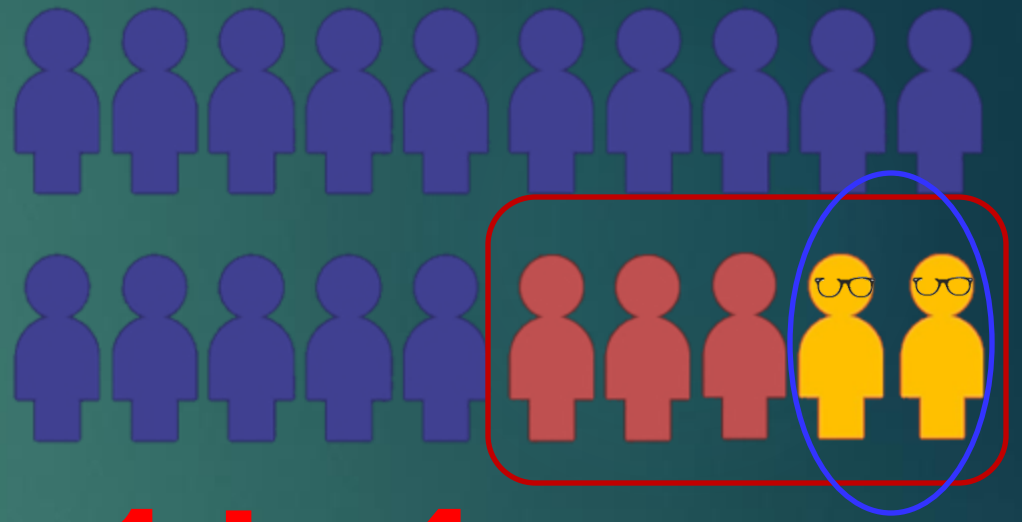


Pediatric Ophthalmology Case… and not an uncommon one

- 8 yo referred because he noticed he couldn't see well out of his left eye
- Exam: VA 20/20 right eye and 20/200 left eye
- Cause: undetected high refractive error in left eye causing dense amblyopia – likely with poor outcome due to his age.

Traditional Paradigm of Pediatric Vision Care





~1 in 4 need eyeglasses

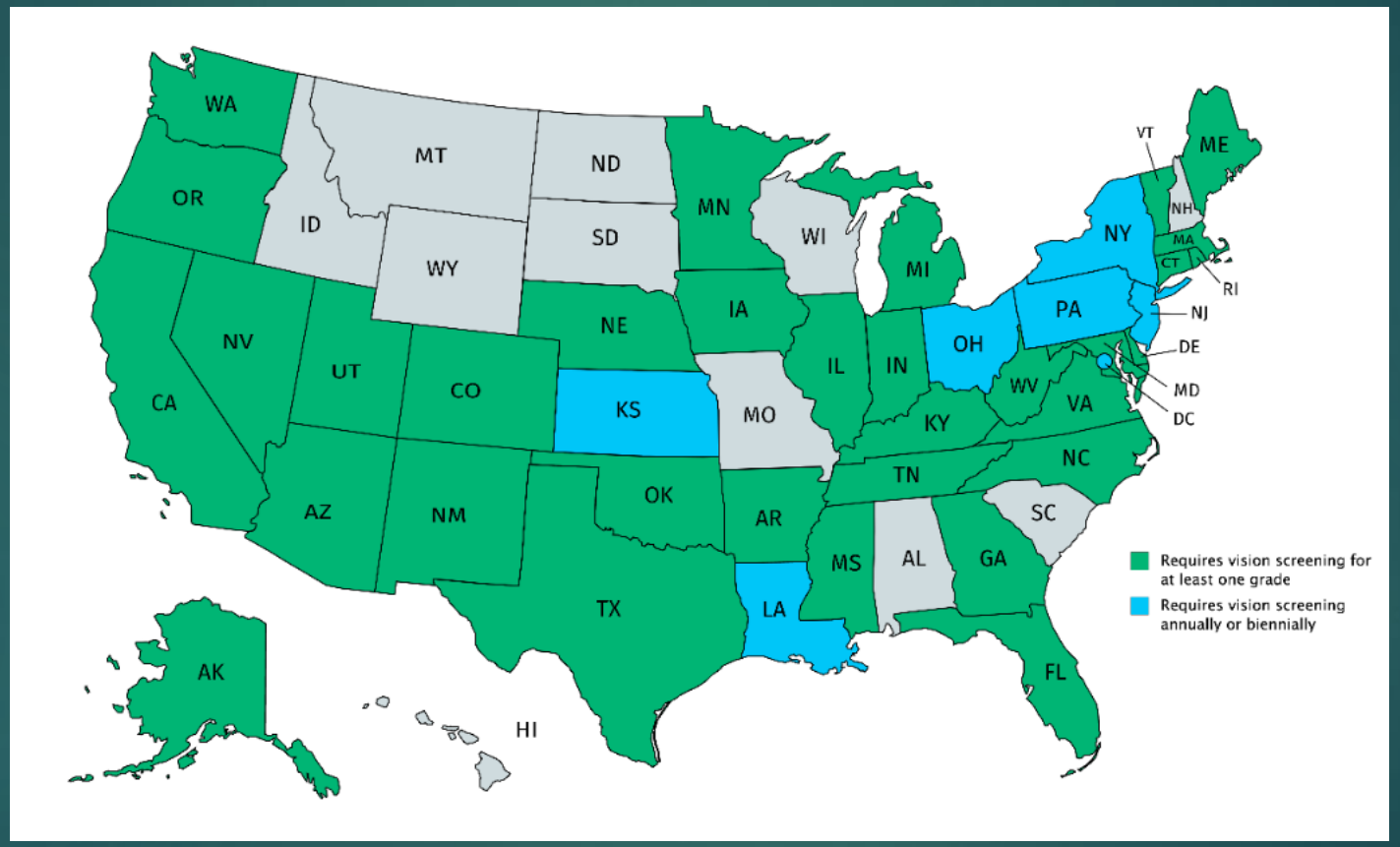
<50% obtain eyeglasses

Kemper et al. Optom Vis Sci. 2004

Slide credit: Megan E. Collins, MD MPH

Collaborative work in organized medicine

Vision Screening Requirements by State



Wahl et al, A comprehensive review of state vision screening mandates for schoolchildren in the United States. *Optometry and Vision Science* (2021)

Vision Screening Requirements
What were we trying to accomplish?

- Vision screenings to detect amblyopia and amblyopia risk factors, and other conditions leading to irreversible vision loss....and THAT'S IT!
- 2016-17 – Maryland Society for Eye Physicians and Surgeons led an effort to increase the frequency of school vision screenings, especially in the lower grades
- Prior – screening in Kindergarten or 1st grade, then 3rd and 8th grades
- Concern among pediatric ophthalmologists is that we likely miss detecting amblyopia without a second screening in the age group that is treatable
- Little concern about simple refractive error

Vision Screening
Maryland Legislation 2017

- 2017 – Legislative outcome: partial success
  - Vision screening at “entry to school”, 1st grade, and 8th grade
  - Success in obtaining a second early screening – stamping out permanent vision loss!
  - Failed at adding screenings – manpower and funding issues

WHAT WE DIDN’T “KNOW”…

Academic Consequences of Vision Impairment

In Plain Sight: Reading Outcomes of Providing Eyeglasses to Disadvantaged Children

Robert E. Slavin, PhD[a], Megan E. Collins, MD[b], Michael X. Repka, MD, MBA[c], David S. Friedman, MD, PhD, MPH[c], Lucy I. Mudie, MBBS, MPH[c], Josephine O. Owoeye, O.D., MPH, FAAO[b,1], and Nancy A. Madden, PhD[a]

Impact of eyeglasses on academic performance in primary school children

Lisa A. Hark, PhD, RD,[*,†] Avrey Thau, BS,[‡] Alexandra Nutaitis, BS,[§] Eileen L. Mayro, BA,[*,‡] Tingting Zhan, PhD,[‖] Nooreen Dabbish, PhD,[‖] Judie Tran, BS,[*] Linda Siam, BS,[*] Michael Pond, BA,[*] Angela R. Rice, MBA,[¶] Alex V. Levin, MD, MHSc[‡,**]

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Effect of a Randomized Interventional School-Based Vision Program on Academic Performance of Students in Grades 3 to 7

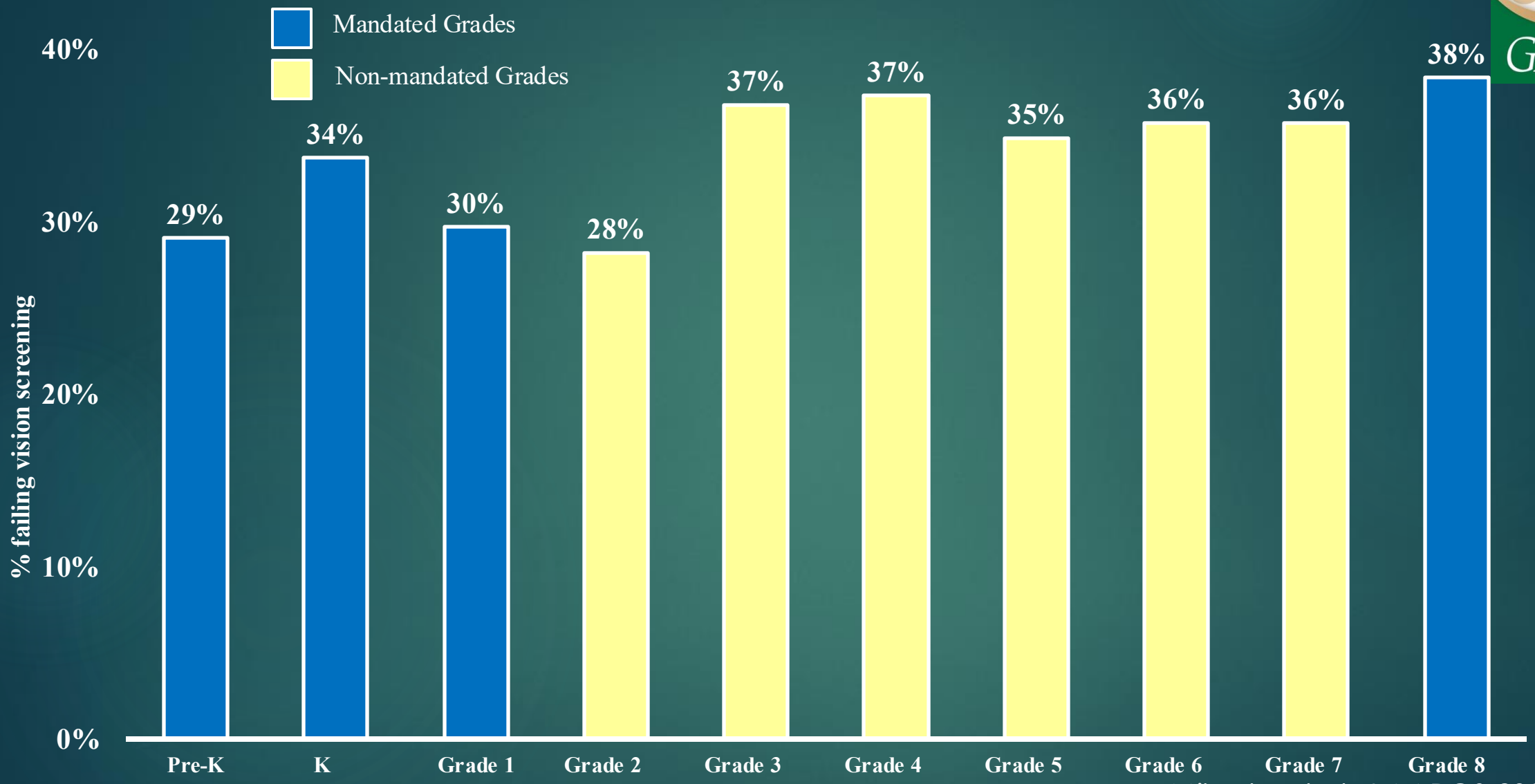
A Cluster Randomized Clinical Trial

Amanda J. Neitzel, PhD[1]; Betsy Wolf, PhD[2]; Xinxing Guo, MD, PhD[3,4]; et al

» Author Affiliations | Article Information

JAMA Ophthalmol. 2021;139(10):1104-1114. doi:10.1001/jamaophthalmol.2021.3544

Vision Screening Failure Rate by Grade Levels



Pre-K = pre-kindergarten; K = kindergarten
Percentage showing proportion of students who failed among those enrolled per grade level

Milante et al, J AAPOS 2021;25:29.e1-7
Slide credit: Megan E. Collins, MD MPH

Disparities in Vision Screening Access and Follow-up

Among disadvantaged and racial/ethnic minority groups, there is

Increased need for vision screenings

- Increased need for eye care among children from low-income families[1]
- Rates of visual impairment due to refractive error projected to increase most among Black and Hispanic pre-school children[2]

Decreased access to vision screenings and follow-up eye care

- State-wide variation in vision screenings correlated with parent-reported vision testing[3]
- Low-income children are particularly vulnerable to barriers in connecting with eye care following a failed vision screening[4]
- National Survey of Children's Health 2018-2019 data shows lower odds of vision screening based on insurance status, immigration status, and parent education[5]

[1] Ethan D, et al. J of School Health. 2010
[2] Varma R, Tarczy-Hornoch K, Jiang X. JAMA Ophthalmol. 2017

[4] Lillvis, John H., et al. J of AAPOS. 2020
Majeed M, et al. British J of Ophthalmol. 2008
[5] Oke, Isdin, et al. JAMA Ophthalmol. 2023

Lessons Learned – Vision Programs

- Many different models in use – need more than screenings
- Universal themes:
  - Need standardized methods, age appropriate with local education
  - Large volume of school-age children in need (high screening failure rates) – ***in every school age group***
  - Need programs helping connect children to eye exams after failed screening
  - High prevalence of uncorrected refractive error (school age) while non-refractive problems are more common in younger
  - Community referrals are made, but little data on success of connecting with care
  - Need stronger systems to connect to long-term community care

Children's Eye Foundation of AAPOS ALL CHILDREN SEE PROGRAM

- Concept based on the Eye Care America Program of the Foundation of AAO
- Connects eligible children with volunteer pediatric ophthalmologists in their community to provide eye exam and treatment for one year at no cost to the patient
- Eligibility has required US documents due to funding restrictions

Children's Eye Foundation of aapos

ALL CHILDREN SEE

Vision Screening Programs - Challenges and Strategies

- Lack of integration with local pediatric eye care and primary care providers
- Lack of formal referral mechanism

- Develop standardized guidelines
- Provide ongoing community care support
- Partner with community providers and academic medical centers
- Develop effective communication channels with parents, teachers, school staff, and community providers