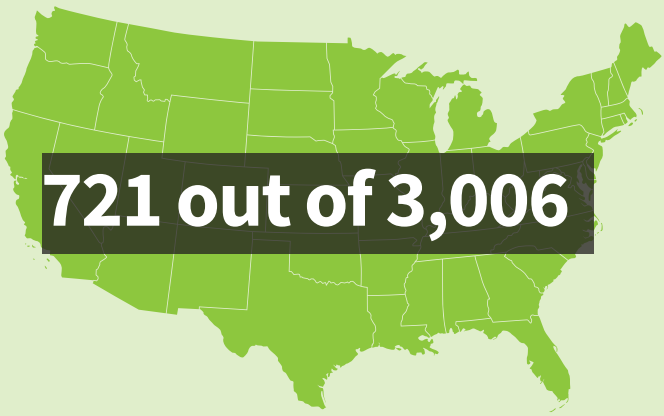
Prevent Blindness
Our Vision Is Vision.

Integrating Eye Care Services into Primary Care

The Growing Impact of Vision Impairment

Eye disorders and vision loss are among the costliest, yet most preventable, conditions in the United States, costing $168 billion in direct medical costs in 2019. It is estimated a full 96% of vision impairment and loss is avoidable. Without significant planning and intervention, research suggest national expenditures could rise to as much as $717 billion by the year 2050, due in large part to the aging of the U.S. population.[1]

Low-income, minority populations, women and children in particular tend to be at greater risk for undiagnosed and uncorrected eye and vision disorders and diseases than the general population.[2]



American counties have NO ophthalmologist or optometrist.

Quality of Life Impact Across the Lifespan

Loss of vision—whether it happens suddenly or over time—can have a major impact on one's mental and emotional health given its significant role in interpersonal connection, engaging in hobbies or interests, independently managing one's daily activities, maintaining independence, and remaining physically active. Children and adolescents may struggle with social connection and academic or athletic performance as a result of vision impairment. In addition, lack of social acceptance from using visual assistive devices (including eyeglasses) may deter children from adhering to eye care treatment. Older adults may face a compounding risk in health status stemming from inability to adapt mentally and emotionally to changes in vision, leading to distress, anxiety, or depression that may cause them to disengage from physical activity (which could lead to chronic illness) and social isolation.

Children from under-resourced urban areas, many of whom are considered ethnic minorities, experience more than twice the normal incidence rate of vision problems but are also less likely to be referred to and receive an eye examination by an eye doctor.[3]

For many underserved, low-income, and rural populations, their only feasible option for eye and vision care services is at their community health center.

Considerations

Community Health Centers are perfectly positioned to meet the comprehensive eye care needs of patients while also reducing costs and preventing greater morbidity and inequity. The following are considerations and recommendations for assisting your health center in assessing and planning for the sustainability of integrating comprehensive eye care services for the benefit of your patients.

29 million people

29 million people visited community health centers nationwide in 2019.[4]

2.78%

Of that 29 million, 2.78% received eye care services. In contrast, 22.50% received dental and 8.65% received mental health services.[4]

Questions to Ask[5]

- Do you have a process in place for patients who need glasses to obtain them?
- How are you assuring that your patients have access to an optical dispensary to fill eyeglass prescriptions and to have eyeglasses replaced, repaired or adjusted?
- Does your pharmacy have all of the eye care medications that your patients need?
- How are you assuring that your children receive comprehensive vision care to diagnose vision and eye problems that could affect learning (such as refractive errors, focusing problems, eye turns, and eye coordination problems)?
- Are you referring at risk individuals for annual eye exams, such as African Americans who have a higher prevalence of glaucoma and Latinos who have a higher prevalence of diabetic retinopathy as compared to Whites?
- How do you track results and need for follow up eye care in high risk patients?
- How are you assuring that all patients with diabetes and hypertension have annual dilated eye examinations?
- If patients are diagnosed with chronic eye conditions (e.g. dry eye, glaucoma) needing regular follow up and treatment, how are you assuring this is being done?
- How are you assuring that elders and those at risk for permanent vision loss are receiving comprehensive and preventive eye services?
- Are you assessing older patients in the area of falls prevention and providing them with falls prevention education?

"Among children aged 3 to 6 years, visual impairment is projected to increase in the U.S. by 45% among Latinx children and 14% among Black children from 2020 to 2060, while vision impairment is expected to decrease by 22% among white children of similar age during this same time period."[6]

Recommendations for Integrated Vision Care Services in Health Centers[7]

1. Develop a sustainable business model

- Consider how your organization might integrate eye health and vision care into other existing patient assistance programs (e.g. Ryan White Program, Health Care for the Homeless program to help support the cost of services and prescription glasses)
- Develop local partnerships with eye care specialists who can see patients for acute issues and establish a workflow.

2. Conduct comprehensive eye exams

- If possible, offer specialized testing including visual fields, fundus photographs, optical coherence tomography (OCT), and specialty contact lens fittings in an effort to reduce outside referrals and financial burden on the patient.
- Based on age and other risk factors, conduct dilated eye exams to detect and monitor certain chronic diseases with special emphasis on diabetic, hypertensive, and HIV+ populations.

3. Build in care coordination

- Establish a bidirectional referral process between the eye care provider and primary care provider(s).
- Eye care providers should be fully integrated into the health care team. Coordination of care for patients might be easier when all providers are under the same roof, but it still requires intentional planning and execution.

4. Engage in patient education and outreach

- Integrate eye care messaging into patient-facing technology (closed circuit TV, wait time messages for phones, patient portal, and/or text message campaigns).
- All members of the care team should be trained in offering basic eye health education to patients and offering referrals to eye health and vision care services in the health center.

Read the full recommendations here: Integrating Eye Health and Vision Care for Underserved Populations into Primary Care Settings

46.7% of adults aged 65 and older ***with*** severe vision impairment or blindness have also experienced a fall.

vs.

27.7% of adults over age 65 ***without*** severe vision impairment or blindness have experienced a fall.

**********.cdc.gov/mmwr/volumes/65/wr/mm6517a2.htm

Levels of Investment/Cost vs Reimbursement Analysis

Cost	Patient Type	Service Type	Reimbursement	Equipment/Space/ Recommendation
$ Less upfront investment/ space	School-aged child on Medicaid	Comprehensive eye exam	Medicaid & Children's Health Insurance Program (CHIP) for all children under 21 reimburses for eye exams and eyeglasses	1 exam lane/no technician Kid-friendly eye testing materials
	Non-Medicaid and non-CHIP	Comprehensive eye exam	Essential Pediatric Vision Care Benefit (ACA 2010) and subsequent regulations provide annual eye exams by an eye doctor for all children from birth through 18, including glasses	(Optical recommended, but can find external sources for glasses)
	Uninsured/Self pay adults	Comprehensive eye exam	Sliding fee scale	1 exam lane/no technician Refer for ancillary testing/ non-profit for glasses
$$ Mid-range investment/ space	Medicare/ Medicaid beneficiary	Comprehensive eye exam	Medicare/Medicaid covers a comprehensive annual eye exam when medical diagnosis/diabetic screen/wrap around payments Many plans have vision riders for routine care/glasses	1-2 exam lanes/trained assistant Refer for ancillary testing/ non-profit for glasses
$$$ Full investment/ space	Medicare beneficiary/ Private insurance All age ranges and insurance/ self pay/ uninsured levels	Comprehensive eye and vision care/ management	Medicare/private insurance reimburses for a comprehensive medical eye exam with diagnostic testing/management and follow up for all medical problems including cataract, glaucoma and diabetes-related retinopathy/wrap around payments	2 exam lanes/eye technician Ancillary equipment like visual fields and OCT. Optical dispensary and staff

Sample Business Plan for Integrating Eye Care Services

START UP/FIRST YEAR EXPENSES* EYE CARE SERVICE	Estimated unit cost (linked to optometry equipment)
STARTING CAPITAL AND IMPROVEMENTS (ONE TIME)	
Ophthalmic Equipment	$185,794
Other handheld equipment	$7,486
Optical (cabinets, inventory, etc)	$57,735
Buildout/Lease Hold Improvements (estimated)	$50,000
SUB-TOTAL ONE TIME START UP COSTS	$301,015
OPERATIONAL EXPENSES	
Optometrist (with benefits)	$150,000
Certified Ophthalmic Assistant/Technician (with benefits)	$35,000
Optical Assistant/Receptionist (with benefits)	$43,750
Billing Clerk	$35,000
Clinic Supplies	$11,500
TOTAL EXPENSES Year 1 with Start Up Costs	**$576,265**

*for full investment
Business plan is available upon request.

Among the Head Start population, Hispanic and Black children make up the top percentages of children who have not received an eye examination by an eye doctor.[8]

Q: What are the expected results of integrating on-site vision care into primary care?

A: Access to comprehensive vision care can help prevent and detect several chronic diseases in the early stages such as: hypertension, cardiovascular disease, Graves' disease, multiple sclerosis, herpes zoster, and tumors.[7]

A: It provides a one-stop shop for patients, reducing barriers to care while also promoting collaborative, multidisciplinary team-based care.[7]

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Integrating Eye Health and Vision Care for Underserved Populations into Primary Care Settings

Prepared by the American Optometric Association and the Association of Clinicians for the Underserved with support from The Centene Foundation for Quality Health Care

December 2020

AMERICAN OPTOMETRIC ASSOCIATION

ACU
ASSOCIATION OF CLINICIANS FOR THE UNDERSERVED

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Introduction

Vision and eye health are linked to overall health, success in school, employability, and independence especially as individuals grow older.[1] Vision loss has been shown to cause substantial social and economic tolls, emotional suffering, social isolation, loss of productivity, and diminished quality of life.[2, 3] Despite the importance of vision and eye health on one's quality of life, many people continue to face barriers to accessing eye health and vision care.

Federally qualified health centers (health centers) are uniquely positioned to improve access to eye health and vision care due to their reach in underserved communities and their emphasis in providing integrated, whole-person care to underserved populations. In a National Academies' Health and Medicine Division report, *Making Eye Health a Population Health Imperative: Vision for Tomorrow,* the authors state that "for many underserved and low-income communities, federally funded community and rural health centers may be the only source of eye and vision care services."[3] Yet, most health centers are not equipped to provide comprehensive eye health and vision care.

The discussion below highlights the eye health and vision care needs of underserved populations, challenges to such care delivery, and best practices for delivering eye health and vision care in integrated care settings. Health centers are the primary target for these best practices, but they may be transferrable to similar care settings. Precise implementation will vary based on the needs of specific communities, available payment streams, and state laws.

Background

Vision and eye health in the U.S.

Eye disease, vision impairment, and blindness are known to be significant public health problems in the United States. At least six million Americans live with chronic vision impairment or blindness.[4] Another 48 million Americans are affected by refractive error that can be treated with spectacles or contact lenses, but almost 33% of these cases go undiagnosed or otherwise uncorrected.[5]

Diabetes (and its complication diabetic retinopathy) is the leading cause of blindness among working age adults age 20-70. According to 2019 Uniform Data System (UDS) figures, diabetes poses a unique challenge for the Health Resources and Services Administration's Health Center Program because 1 in 7 health center patients has diabetes and nearly 1 in 3 of those has uncontrolled diabetes.[6] Cataracts, glaucoma, age-related macular degeneration, and other ocular diseases affect almost 30 million Americans over the age of 40.[7] As age is an independent contributor to vision loss, the aging of the American population will contribute to a dramatic increase in all of these conditions.

Vision disability is one of the most feared disabilities among adults, associated with social isolation, increased risk of falls, and depression.[8] The number of blind and visually impaired people is expected to double by the year 2050.[4] Economically, vision loss and eye disease were estimated to cost the U.S. $145 billion in 2014. Eye disorders currently rank fifth among the top eight chronic conditions in direct medical costs. As the population ages and demographics shift, this number could quintuple to $717 billion a year by 2050 unless existing infrastructure and resources are expanded to address vision health.[2]

Even more significant is the fact that chronic vision disorders, such as diabetic retinopathy and glaucoma, have no symptoms in their most treatable stages. According to data from the National Eye Health Education Program (NEHEP) Public Knowledge, Attitudes, and Practices Survey, more than 70% of individuals believe the loss of their eyesight would have the greatest impact on their day-to-day life; however, less than 11% knew that there are no early warning signs of glaucoma and diabetic retinopathy.[9]

Disparities in vision and eye health

Disparities in eye health and vision care generally mirror the overall state of health disparities, in which racial and ethnic minorities have higher rates of chronic disease than whites.[10] Individuals of Hispanic or African descent are more than twice as likely as Caucasians to go blind from vision disorders of diabetic retinopathy and glaucoma. [11]

African Americans over the age of 40 have a higher prevalence of uncorrectable vision impairment and blindness than all other groups.[4] In a study of African-American patients with diabetes at high risk for diabetic retinopathy and vision loss, only 30% of patients screened followed through with their eye care providers' recommendations for comprehensive eye exams. Concerningly, among patients referred for urgent follow-up care (as opposed to a recommended exam within one year), the rate of compliance was

even lower. Even though frequently cited barriers were addressed: exams were low cost or free, the eye doctor was co-located with the patient's usual source of diabetes care, and assistance was offered with making the appointment, patients still frequently failed to receive needed care. The study's researchers concluded that diabetic retinopathy screening programs are not likely to meet public health goals without incorporation of eye health education initiatives successfully promoting adherence to recommended comprehensive eye care for preventing vision loss.[12]

In a population-based study of Latinos 40 years and older living in Southern California, only 36% reported having an eye care visit of any kind in the past year; 19% reported having a comprehensive (dilated) eye exam in past year; and 57% reported having a dilated eye exam ever. Those who had a usual source of care and a usual provider were significantly more likely to use eye care.[13]

These disparities are linked to social determinants of health including access to and receipt of health care, health behaviors, nutrition, employment, discrimination, income, physical and social environments, transportation, and housing.[14] Socioeconomic status itself is an important determinant of visual impairment,[15] and the risk of eye disease and chronic vision impairment is increased in Americans of all ages who are poor, are unemployed, or have less than a high school education.[16] The likelihood that an individual will report having an eye care visit in the preceding 12 months decreases with a lower income and lower level of educational achievement.[17]

Children do not escape the impact of poverty on vision and eye health; a child living below the federal poverty line has nearly twice the risk of being visually impaired when compared to a child living at 200% of the federal poverty line or higher.[18] This disparity can be at least partly explained by the impact of limited access to eye and vision care, which may be within the power of community health centers to mitigate, as approximately one third of the total health center population served are children.

People experiencing homelessness also have higher rates of vision impairment including a significant amount of uncorrected refractive error, as well as eye disease, and reduced rates of eye exams. [19, 20, 21] Studies conducted among homeless populations in Canada, where residents enjoy universal health coverage, might demonstrate better health access and outcomes related to eye care than could be expected in the United States, where lack of coverage correlates with negative health outcomes.[22]

Among rural populations, eye health and vision problems are a significant concern. First, rural populations tend to be older, sicker, and poorer than their urban counterparts, and all of those factors are independent contributors to eye health and vision problems.[23] Even accounting for age difference, rurality was shown to be independently associated with vision loss among older veterans receiving care through the Veterans Health Administration.[24] Rural residents have been shown to be less likely than urban residents to have insurance coverage for eye care services and to cite lack of insurance as a reason to avoid receiving care.[25] As such, rural patients are less likely than urban patients to report receiving a dilated eye exam.[26] Farmworkers are at particular risk for cataracts, due to their high rates of exposure to UV light, eye injury, and other environmental dangers. There is also a documented low uptake of protective eyewear use.[27]

Vision service coverage

In 2019, 23% of health center patients were uninsured, and 48% of patients were covered by Medicaid.[28] In most states, Medicaid covers eye exams and glasses. Earlier research noted Medicaid-covered health center patients were more likely than uninsured health center patients to have had a visit with an eye care provider (39% vs 29%).[29] Health centers in Medicaid expansion states provided more eye and vision care than the health centers located in states that did not expand Medicaid (27% v. 18%).[30]

For adults, private medical insurance plans and Medicare typically do not cover comprehensive eye exams for asymptomatic patients who are not in a specific high-risk category. In 2019, nearly 10% of health center patients were insured through Medicare.[28] According to Medicare Part B claims data from 2017, only 45.25% of Medicare beneficiaries had an eye exam.[31] Because risk of eye problems increases with age, it might be expected that this is the population with highest utilization of services.

Employers generally offer and subsidize group health plans but usually offer vision coverage in a separate, unsubsidized stand-alone plan that beneficiaries opt into purchasing. In 2019, only 26% of private industry workers had access to vision care benefits, and 80% of those with access chose to participate in those plans.[32] Health centers reported that nearly 19% of their patients had private insurance in 2019. While data is not available to determine how many health center patients have vision care benefits, the majority of health center patients live at or below poverty levels and may see such plans as a luxury. Besides, choosing an add-on vision plan is often based on perceived need, but most vision conditions that result in blindness are asymptomatic in their treatable stage.

Children have relatively high rates of insurance coverage compared to adults and, for almost all children, medical insurance coverage includes vision coverage. In 2018, only 5.2% of children were uninsured.[33] The Medicaid Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) benefit program includes screening, diagnosis, and treatment for vision conditions, including eye examinations and eyeglasses. Children receiving insurance through the State Children's Health Insurance Program (CHIP) have access to comparable eye care services. Finally, the essential health benefits provision of the Affordable Care Act required that qualified health plans and all plans in the small group and individual insurance markets include pediatric vision care; for nearly all states, this benefit was defined as an eye exam and eyeglasses annually from birth through age 18. As is typical of insurance coverage, there are variances in co-payment from plan to plan and state to state.[3]

Many uninsured and underinsured populations rely on federally funded community and rural health centers which may often be the only locally available source of eye and vision care services.[3] Yet, access to eye health and vision care within the community health center program is limited. According to the Health Resources and Services Administration, in 2019, health centers employed only 444 full-time equivalent doctors of optometry and ophthalmologists, the physicians qualified to provide comprehensive eye care, across almost 1,400 health centers with around 13,000 service delivery sites. Less than 3% of health center patients received vision care services in 2019, representing 0.89% of clinic visits.[34]

Mobile clinics: a temporary solution

Mobile eye care units or specially scheduled "eye care days" at the health center or other local community facility (including schools) can provide an extension of health center eye health and vision care to reach underserved populations, including people experiencing homelessness, farmworkers, and other unique groups. Such programs should provide comprehensive exams, diagnosis, and initiation of treatment at the point of service, with coordinated referral relationships with local eye doctors for follow-up care.

Researchers at the Casey Eye Institute developed a community outreach program to attempt to mitigate the problem of referral compliance for vision screening programs. Through a partnership with community health and social service organizations, 97% of patients were offered comprehensive eye exams on-site from a physician after volunteers completed diagnostic testing. Diagnosis and initial treatment, including prescription spectacles, via a comprehensive eye exam, were provided in the initial program, eliminating the need for most referrals. Only twenty-one percent of patients were referred for further follow-up care.[35]

Barnes et al. (2010) conducted mobile eye screenings for people experiencing homelessness in Oahu, Hawaii, and determined that dissatisfaction with eye health was widespread among this population, and access to care and knowledge of available services were low.[36] In this study, people experiencing homelessness had an unusually high rate of insurance, 77%, but low service utilization. This was particularly concerning in the case of patients with diabetes, 70% of whom had never been evaluated by an eye doctor as recommended by clinical guidelines. The authors suggested that the mobile eye clinic addressed the specific challenges of transportation and social stigma for people experiencing homelessness in an ambulatory care setting.

Researchers have assessed a variety of mobile and stationary children's vision screening programs. Hark et al. (2016) showed that with screening programs, children, like adults, suffer from loss of follow-up, even when a social worker pursues the follow-up appointment.[37] Diao et al. (2016) noted that bringing the comprehensive exam unit to the school setting could improve follow-up completion.[38]

The use of trained medical students to provide eye services has also been translated to a mobile eye service model in collaboration with local health centers. In the case of Guerilla Eye Services in Pittsburgh, participants received comprehensive eye exams in the initial stage at no cost, eliminating the challenge of loss to follow-up for the purposes of diagnosis and initial treatment. Patients with appropriate diagnoses were also referred for further care. This study utilized medical students, ophthalmology residents, and an attending physician in order to provide comprehensive care while offering clinical education opportunities. Seventy-two percent of patients completed referrals for follow-up.[39] It should be noted that the use of students to perform this type of care should consider state licensing and liability regulations.

The literature indicates that simple vision screening services offered in a mobile or temporary setting have low rates of success in getting patients needed care. To be effective and to efficiently use limited resources, mobile eye care units and temporary eye care days should offer comprehensive care at the

point of patient contact. They then limit the number of patients who require additional referrals and can better use support resources to ensure those patients get follow-up care. These services should only be offered if there are local referral sources willing to assume the care of complex patients, whether within the health center or elsewhere. Additional challenges to this model may arise at the state level, especially if volunteer clinicians are utilized. Some states limit the use of mobile clinics, and volunteer clinicians may complicate billing insurance plans for insured patients, an important factor if eye health and vision care are to become self-sustaining financially.

The case for on-site eye health and vision care

The provision of on-site, comprehensive eye and vision care speaks directly to the mission of health centers to provide primary, preventive health care services. A National Academies of Sciences, Engineering, and Medicine (NASEM) report highlights that avoidable vision impairment "occurs because of outdated assumptions, missed opportunities and shortfalls in public health policy and health care delivery in the U.S" and that "promoting optimal conditions (*i.e. access to eye examination*) for vision and health, can positively influence many social ills, including poverty."[3] Accordingly, adding or expanding eye and vision care at health centers sends a clear message that supports NASEM's contention that access to comprehensive eye exams is essential for optimum U.S. population health outcomes.

Lacking on-site eye health and vision care, community health centers may have a referral relationship with an outside doctor of optometry or ophthalmologist. This can supplement available health care for patients at the health center. However, it introduces challenges related to transportation, scheduling, and possibly cost for patients. It also demands a more concerted effort to ensure that patients follow through with needed care and that the referring provider at the health center and the outside physician coordinate and communicate about each patient's health.

A number of studies have considered the role of community health centers in improving access to eye and vision care among rural populations through the use of vision screening by trained medical students and efforts to encourage completion of referrals. In all studies, 70 to 80% of patients met the criteria for referral. In one study, as many as 89% of those referred completed their referral appointments,[40] but the completion rate was much lower in all other studies, around 50% or less.[41] [42] Friedman et al. concluded that the screening tools used in these programs lacked the sensitivity and specificity to be effective for screening an adult population and that half of those referred were lost to follow-up.[43] Similar studies and similar effectiveness outcomes of vision screening with 52% lost to follow-up have been documented in the pediatric population as well.[44]

Payment methodology for federally qualified health centers may make referrals less appealing as eye care providers outside of the health center setting may receive lower Medicaid reimbursement for the same services. Reimbursement levels for Medicaid or uninsured patients limit the capacity of local optometrists to provide eye care services to health center patients, relative to such services offered within the health center and billed under the Prospective Payment System (PPS).[45]

By initially contracting with a local eye care provider to work on-site on a part-time basis, health centers can immediately meet the needs of their patients. However, given the exam space required, over time it may be more efficient for health centers to scale up and utilize that capacity on a full-time basis by hiring their own staff as they build out their programs. The Association of Clinicians for the Underserved has tools to help health centers determine readiness to offer eye health and vision care and calculate the resources needed.

Working with local schools and colleges of optometry and ophthalmology programs can offer opportunities to deliver on-site eye health and vision care while providing clinical experience to students and residents. While externships and residencies for optometry students and doctors of optometry do not offer the same consistency of care that patients might expect from a long-term staff physician, it can expand capacity and offer clinical experience in a unique setting for students and new doctors. As of the writing of this paper, the number of schools and colleges of optometry in the United States has increased to 23, providing increased opportunities for collaborations with health centers.[46] In 2019, health centers trained 581 pre-graduate and 202 post-graduate optometrists and 4 pre-graduate and 39 post-graduate optometrists.[47] Additional loan forgiveness options and inclusion in the National Health Service Corps have potential to increase these numbers.

Integrating on-site eye health and vision care into primary care

Access to comprehensive vision care can help prevent and detect several other chronic diseases in their early stages including hypertension, cardiovascular disease, Graves' disease, multiple sclerosis, herpes zoster, and tumors. In all, 24 common chronic diseases can be impacted in their early or late stages through comprehensive eye care.[48]

Many health centers have looked into the role that eye care providers can have in supporting the comprehensive health care needs of patients diagnosed with diabetes. Retinopathy is the most common diabetes-related eye disease affecting 29% of U.S. adults over the age of 40 who have diabetes. It is also the leading cause of new cases of blindness in working age adults.[49, 50] The longer a patient lives with diabetes, the greater his or her risk of sight-threatening diabetic retinal disease, and if the diabetes is uncontrolled, the risk increases further.[51] Seventy-three percent of persons with diabetic retinopathy are unaware of their condition (diabetic retinopathy), and only about 60% of people with diabetes have recommended yearly screenings for diabetic retinopathy. [52] As such, integrating eye care into primary care services can support quality improvement initiatives related to diabetes outcomes.

In-person comprehensive eye care remains the gold standard (high value). However, teleretinal screening programs may help to supplement comprehensive eye health and vision care services. In 2019, health centers conducted 2,178 vision visits virtually.[34] In one study conducted at a community health center, a teleretinal screening program resulted in a 20% increase in compliance in the first year. In this system, the report from the consulting specialist was sent directly to the primary care doctor at the health center. Referrals for in-person care were made for patients with evidence of retinopathy.[53] Some studies have shown that this tactic can yield cost and time savings for the patient as well, particularly in remote settings.[54]

Integrated care models that include eye and vision care should establish systems where eye care providers share eye health information with others on the care team including primary care providers, case managers, and community health workers. Information provided by eye care providers can prompt primary care providers to conduct baseline evaluations and update care plans accordingly. Case managers and community health workers are valuable resources to help address barriers to attending regular appointments and increase patient understanding of the importance of eye health as it relates to their disease. Referrals should be bidirectional so that eye care providers are notified when high-risk patients require a comprehensive eye examination.

All patients should receive education about their risk, and the need for and availability of eye health and vision care services in the health center setting. Reaching at-risk populations and educating them in a culturally competent way about their risk for eye disease, vision loss, or injury, and the need for and availability of eye health and vision care services offered by the health center should be a programmatic priority. All departments within a health center should be trained in offering basic eye health education to patients and offering referrals to eye health and vision care services in the health center.

Conclusion

Vision impairment and blindness are large and growing problems in the U.S. The provision of on-site vision care at health centers will improve health outcomes for millions of at-risk individuals seeking care at health centers. Doctors of optometry provide almost 80% of the nation's primary eye care. Where currently available, doctors of optometry also serve to provide the majority of accessible doctor-related eye care within existing health center settings. Yet, there remains a lack of community health center settings across the nation where eye care can be accessed by targeted patient populations. Funding the development and execution of a model to increase comprehensive eye and vision care capacity at health centers, including the integration of vision care throughout all health center services, is critically needed.

The success found with the co-location of oral health service providers and community health centers demonstrates that integrated care can benefit community health center patients by increasing access and referral follow-up rates; this model is promising for the future integration of vision and eye health care. [55] Moreover, health center administrators are eager to establish eye and vision care programs. In a survey of federally qualified health centers in Missouri, for example, of the respondents who did not have eye health and vision care available to their patients, all but one indicated a desire to incorporate it given sufficient funding and space.[56]

Community health centers have long understood the value of exposure to their unique, integrated workplace in inspiring commitment to working with underserved communities. Opportunities exist through current programs such as the National Health Services Corps (NHSC) to support entry into these care settings, but efforts to expand these programs to include doctors of optometry could be valuable to increasing access to care.[57]

Recommendations for Implementing Eye Health and Vision Care in Health Centers

By utilizing these best practices for implementing eye health and vision care services, community health centers can provide effective, long-term quality eye care and better serve unique patient populations that may otherwise go without needed care.

Develop a sustainable business model

- Develop local partnerships with eye care specialists who can see patients for acute issues and establish a workflow.
- Explore academic partnerships to build clinical experience in primary care for future practitioners.
- Approach payers about new/alternate payment models that incorporate eye care.
- Evaluate, select, and purchase equipment based on current need.
- Consider how your organization might integrate eye health and vision care into other existing patient assistance programs (e.g., Ryan White Program, Health Care for the Homeless program) to help support the cost of services and prescription glasses.

Conduct comprehensive eye exams

- Based on age and other risk factors, conduct dilated eye exams to detect and monitor certain chronic diseases with special emphasis on diabetic, hypertensive, and HIV+ populations.
- Assess risk for eye injury including from environmental factors. Providing and encouraging the use of protective eyewear could prevent as much as 90% of injuries among farmworkers.
- If possible, offer specialized testing including visual fields, fundus photographs, optical coherence tomography (OCT), and specialty contact lens fittings in an effort to reduce outside referrals and financial burden on the patient.
- Develop systems that allow for pre-scheduled and walk-in visits that make sense for your service site and population needs.
- If possible, offer affordable and low-cost materials including glasses and medically necessary contact lenses.

Build in care coordination

- Eye care providers should be fully integrated into the health care team. Coordination of care for patients might be easier when all providers are under the same roof, but it still requires intentional planning and execution.
- Establish a bidirectional referral process between the eye care provider and primary care provider(s).

- Eye care providers should have access to the complete medical record including patient information related to chronic diseases that put people at higher risk for poor eye health, family history of poor vision and eye disease, and medications that have serious eye side effects.
- Design a system to remind primary care teams when patients are due for comprehensive eye exams at the time of visit. Invest in an integrated EHR with internal referring capabilities as well as a reliable recall system.
- Develop workflows that account for outreach and tracking and measuring outcomes (particularly for high-risk groups).
- Case managers and community health workers can conduct outreach to remind patients about appointments, address barriers to attending appointments, and reiterate the importance of eye care.
- Train eye care providers to code claims with chronic condition categories.
- Conduct pre-visit planning and coordinate youth wellness visits and/or annual physicals on days when on-site eye care providers are physically present.
- Integrate diabetic retinopathy screenings and education into diabetes care plans.
- Patients with severe or very severe nonproliferative diabetic retinopathy, early proliferative diabetic retinopathy with risk of progression, or high-risk proliferative diabetic retinopathy should be referred to an ophthalmologist experienced in the management of diabetic retinal disease for possible panretinal photocoagulation (PRP) or intravitreous anti-VEGF treatment.[58]

Engage in patient education and outreach

- Integrate eye care messaging into patient-facing technology (closed circuit TV, wait time messages for phones, patient portal, and/or text message campaigns.)
- Develop scripts for standardized messaging to patients to remind them of eye care appointments.
- All members of the care team should be trained in offering basic eye health education to patients and offering referrals to eye health and vision care services in the health center.
- All patients should receive education about their risk, and the need for and availability of eye health and vision care services in the health center setting.
- Diabetic retinopathy telehealth programs should incorporate an eye health education initiative to increase success and explain their limitations. [59]
- Educate at-risk populations in a culturally competent way about their risk for eye disease, vision loss or injury, and the need for and availability of eye health and vision care services offered by the health center.

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Why Every Community Health Center Needs Optometry

https://eyesoneyecare.com/resources/why-every-community-health-center-needs-optometry/

by Kristin White, OD SEP 10, 2021

Optometrists should be partnering with community health centers nationwide to bring affordable, high-quality eyecare. Discover how you can improve the vision, ocular health, and the overall well-being of underserved communities.

As a profession, optometry is uniquely suited to bridge the gap in the healthcare system between patients who do not routinely access care with the medical attention they need. Community Health Centers (CHCs) are multidisciplinary healthcare practices where this interconnection between medical providers is essential to its functioning. Across the United States, optometry is dramatically under-represented in community health centers.

This article will explain why all CHCs nationwide would benefit from adding optometric services to enhance the ocular and overall health of the communities they serve as well as the benefits to optometrists and the health centers themselves.

What is a community health center?

Community Health Centers, also known as Federally Qualified Health Centers, FQHCs, are multidisciplinary healthcare organizations that provide affordable, cost-effective, high-quality primary and preventative care to medically underserved populations. CHC's may offer limited services such as primary care and dental only or may be as expansive to include other specialties such as optometry, behavioral health, pharmacy, radiology, pediatrics.

CHCs have been shown to reduce health disparities and manage chronic illnesses in a cost-effective manner as well as reduce emergency room visits. Given that CHCs are designed to provide healthcare where barriers to care exist in medically underserved communities, they are ideally positioned for improving access to comprehensive eyecare services. This can benefit their populations' ocular, visual and systemic health.

Stats on optometry in community health

According to the National Association of Community Health Centers, optometry's presence in community health centers has increased from 17% in 2010 to 25% in 2018. While trending in a positive direction, this number is still very low compared with other specialties. As an example, dental services are offered in 82% of all CHCs.

Figure 5-14

Percent of Health Centers Offering **Vision Services** Onsite, 2018

Notes: National figure includes all 1,362 health centers in every state, territory, and D.C. Some territories are not shown in the map above. Binned by quantile for states and territories shown. Based on the number of health centers employing more than 0 full-time equivalent vision staff.
Source: 2018 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.

According to the Health Resources and Services Administration (HRSA) 2019 National Report, of the roughly 41,000 optometrists practicing in the United States only 398 of them were practicing in community health centers, or less than 1%.

The lack of eyecare services is well recognized on a national level. The Healthy People Campaign includes 14 vision specific objectives. Some pertinent ones include: reduce vision loss from diabetic retinopathy, glaucoma, macular degeneration, and cataracts. One objective recognized as a high priority public health issue is to increase access to comprehensive vision services in community health centers. Yet a lot of work remains to be done.

Importance of eyecare services in multidisciplinary settings

CHCs improve health quality metrics for the communities they serve and are therefore aptly positioned to also improve the ocular and visual health needs of these same patients across the nation. CHCs nationwide should therefore be eager for optometrists to work in-house. This will increase the overall health of their patient population.

Poor vision not only means worse school and work performance, and more risk for falls in the elderly. In many cases vision impairment is caused by systemic diseases that need to be addressed by their primary medical team. Many residents in low-income areas do not have the ability to travel far to reach an optometrist outside of their community and will be more likely to be seen at their health center where they are accustomed to having their medical care than traveling elsewhere for an eye exam.

Despite the Centers for Disease Control and Prevention declaring vision loss a public health crisis, legislative initiatives to increase the delivery of eyecare services are largely absent. For example, Medicare historically does not cover eye exams or glasses for its beneficiaries (although a bill to overturn this is currently being debated). This leaves a great economic burden for elderly patients, many of whom are on fixed incomes. Medicaid coverage varies greatly by

state; some states cover eye exams and glasses for both adults and children annually and others cover only eye exams once every two to four years.

Primary care and primary eyecare working together

Optometrists can be a first entry point for many patients into the healthcare system. Patients who may not have seen any medical provider for many years, may present to an optometrist due to perceived need for glasses. During their eye exam, their optometrist can explain signs of systemic diseases like diabetes and hypertension that they find in the exam or notify the patient of conditions they may be at risk for based on their history. The optometrist can easily connect the patient to a primary care provider within the CHC to address these systemic concerns.

Working in a community health center is the perfect environment for comprehensive patient care.

Primary care providers (PCPs) can also provide significant referrals to optometrists as all FQHCs must meet certain requirements for diabetic retinal eye exams to maintain compliance with federal programs such as GPRA and HEDIS. Additionally, urgent eye problems like ocular injuries, foreign bodies and red eyes can be examined the same day by the in-house optometrist.

Benefits to a new optometry graduate working in such a setting

Community health centers are an exciting place to work. Optometrists are viewed as a valued member of the healthcare team and are able to practice full scope optometric care. New grads will work closely with other medical departments and become familiar with working with a diverse community. They can gain experience with a high volume of ocular disease that they may not have as much access to working in other settings. This can propel their careers forward allowing them to gain confidence working with complex medical conditions faster.

Not only do community health centers serve patients in need and provide professional satisfaction, they also offer public service loan forgiveness or other federal student loan repayment programs like Indian Health Service Loan Repayment - big selling points for new grads in debt.

Insurance/billing considerations

CHCs are a cost-effective means of providing care. CHCs receive federal, state and local funding to subsidize a portion of the services provided. Medicare and private insurances reimburse the same as for another practice in the same area.

Additionally, since CHCs are reimbursed by Medicaid at a flat, government-negotiated rate per encounter in any department, optometry exams will enhance reimbursement for the health center as a whole. Not only can exams be billed, but revenue will be increased due to the sale of glasses and contact lenses.

Networking with health centers

Given that the majority of health centers in the country do not offer vision care services, there is great need for optometrists to work with community health centers to help establish optometry departments. After locating a health center in need of optometry, find a way to make contact

with the CEO or Chief Medical Officer. If you are able to meet someone who works with the health center in a different capacity, ask them to make introductions for you.

Plan a meeting to discuss the mutual benefits of starting an optometry department for the health center and the ways that ocular health represents a crucial aspect of systemic health. This article and its associated resources can provide talking points to highlight these benefits.

Once the CHC is interested in developing an optometry department, there will be some logistics to work out. If you are an optometrist interested in working with a health center to open an optometry department, you will find more specific information on logistics of how to do so in my other article here.

If a CHC is interested in developing an optometry department, I would suggest reaching out to local optometrists in their area to see if any would be able to provide care on a part-time basis. This can expand to a full time position as demand for services increases.

Another way health centers can connect to optometrists is by networking with a local optometry school. Student doctors and attending optometrists can provide eye care to an entire city. Optometry schools can also link health centers with recent graduates who may be interested in helping the CHC develop an optometry department.

Challenges and rewards

One of the biggest challenges working in a community health center can also be what makes it so rewarding. Many patients have multiple complex health conditions going on, many that they not even be aware of.

As an optometrist, you get to work with a healthcare team to determine what the underlying cause is and help this patient maintain their vision to the extent possible and even save their life.

Call to action

For optometry students:

- Select rotations within community health centers.
- If your school doesn't offer many rotations within CHCs, encourage your school to form relationships with nearby health centers in need of optometry services.
- Pursue a residency in a community health center so you can gain greater understanding of how CHCs operate and then help open an optometry department in another CHC after residency. (Community Health was previously its own category of residency program. Now you can find residencies within community health centers under Primary Care Optometry as well as Ocular Disease).

For optometrists:

- Research CHCs in your desired community to see whether they offer optometry services, if not, connect with the Chief Executive Officer, Chief Operating Officer or Chief Financial Officer to begin the conversation regarding opening an optometry department.
    - Share this article and other resources regarding the benefits of optometry in CHCs.

    - Here's a great resource from Prevent Blindness America regarding costs and benefits in opening an optometry department.
- Consider partnering with an optometry school in your state to join together to provide optometry services in a nearby CHC
- Connect with your local AOA chapter to push for including optometry in the National Health Service Corps Loan Repayment Program.

For CHCs:

- Broaden your understanding of the benefits optometry services can provide to your health center and your patients.
- Connect with the Dean of Academic Affairs at an optometry school (it doesn't even have to be in the same state as your CHC) to discuss opening an eye clinic in your health center to more fully serve your patients whole body health care needs.
    - Optometry schools can also connect you with graduates of their residency programs who may be ideally suited to work in the CHC environment.
- Read this article which will provide more insight as to the step-by-step that will be needed to open your optometry department.
- Assess your health center's readiness for opening an optometry department.
- Find out whether you may be eligible for a grant to help develop an optometry department.

Conclusion

CHCs are ideally positioned to reduce disparities in access to comprehensive eyecare and enhance the ocular health needs of the populations they serve. Optometrists are the primary eyecare providers and should be partnering with CHCs nationwide in this effort to bring affordable, high-quality eyecare to every community health center in the country. When we improve the vision and ocular health of our patients, we can also enhance their systemic health and overall well-being.

About Kristin White, OD
I graduated from NECO in 2013. After graduation, I did a residency in community optometry in Boston. I have also worked with Indian Health Services in New Mexico and recently have opened an eye clinic within a community health center in Northern California for Native Americans and Medicaid patients. I have a passion for providing eye care domestically and internationally to areas in need.

National Center for Children's Vision and Eye Health

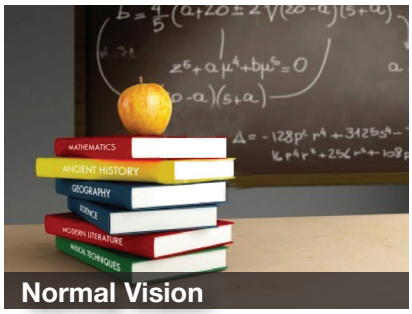
Prevent Blindness

Children's Vision and Eye Health:

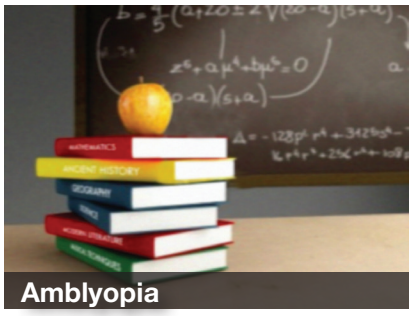
Selections from the Snapshot of Current National Issues

Common Vision Disorders in Children

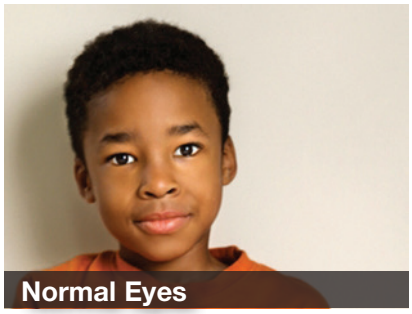
Amblyopia



Normal Vision


Amblyopia

Strabismus


Normal Eyes


Misaligned Eyes

VISION LOSS

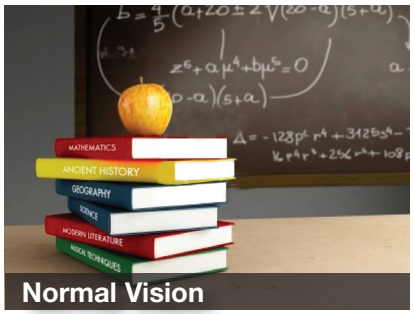
According to the 2016–2017 National Survey of Children's Health, 1.6% of U.S. children from birth through 17 years suffered from blindness or had problems seeing even with the use of glasses, which represents over 1.1 million children.[18] The number of preschool children (ages 3 to 5) in the U.S. with vision impairment is estimated to be more than 174,000.[13] An analysis of children's vision disorders in 2015 with projections to 2060 indicates significant increases in visual impairment among Hispanic, Asian-American, and multi-racial children ages 36 months to 72 months old[13] (*Table 6*). California, Florida, and Texas are estimated to be the states most impacted. [13]

AMBLYOPIA

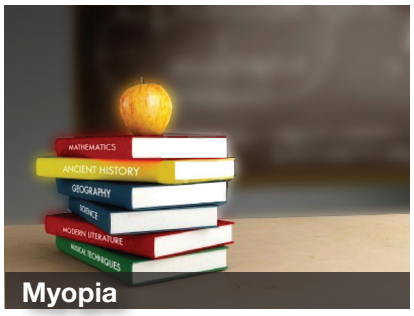
Amblyopia (sometimes called "lazy eye") is the most common cause of vision loss in children and occurs in about 2% to 4% of young children (ages 6 months to 6 years)[19,20,21] With amblyopia, vision is impaired due to abnormal development of the neural connections between the brain and the eye during early childhood. The primary causes are misalignment of the eyes (strabismus) and high-uncorrected refractive error or unequal refractive error between the eyes.[22] Amblyopia may also occur with other causes of vision loss. Typically, the vision loss affects only one eye, but people with amblyopia are nearly three times more likely to develop vision impairment in their better-seeing eye later in life.[23] Early detection of amblyopia is critical as treatment is most successful when initiated *before* age 7. The battle to prevent vision loss due to amblyopia is a winnable battle; other countries have made strides toward eradicating vision loss due to amblyopia.[24] Without early treatment, amblyopia can lead to permanent vision loss in one or both eyes.[25]

STRABISMUS

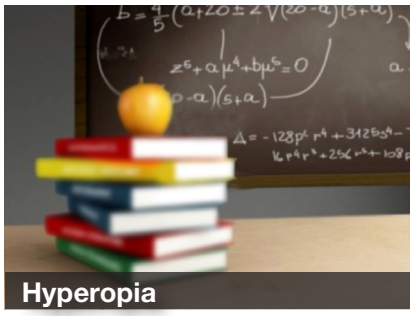
Strabismus, or misalignment of the eyes, occurs in 2% to 4% of children under the age of 6.[19,20,21] The term "eye alignment" refers to how the eyes align and work together when looking at an object. Strabismus orients the eyes in different directions and thus the brain receives conflicting visual input, interfering with binocular vision development and depth perception. Terms used to describe the direction of the eye(s) are: esotropia (eye turns inward toward the nose), exotropia (eye turns outward and to the side), hypertropia (eye turns upward), and hypotropia (eye turns downward). Without treatment, vision loss in one eye can occur and the appearance of misaligned eyes may negatively affect the emotional health, social relationships, and self-image of children.[4] Risk factors for strabismus are family history of the condition, prematurity, and maternal smoking.[26]



Normal Vision



Myopia


Hyperopia


Astigmatism

REFRACTIVE ERRORS

The most common vision disorders in children are refractive errors: myopia ("nearsightedness"), hyperopia ("farsightedness"), and astigmatism (irregular shape of the front surface of the cornea, the transparent "window" at the front of the eye). Refractive errors occur when light does not focus on the retina (the "film" in the "camera"), causing blurred vision. Uncorrected refractive errors in young children are associated with parental concerns about developmental delay, as well as deficits in cognitive and visual-motor functions that may affect school readiness and performance.[5,6,7] Estimates of prevalence vary due to differences in diagnostic criteria and examination methods. Refractive errors make up 70% of decreased visual acuity in Asian and non-Hispanic White children and more than 90% of decreased vision acuity with an identifiable cause.[27]

Myopia is a condition in which objects in the distance are blurry. Four percent of children aged 6 months to 6 years[28] and 9% of older children (ages 5 to 17 years)[29] have myopia, or nearsightedness. Prevalence varies by age and race/ethnicity.[29,30,31]

Hyperopia is a condition whereby close objects are blurry. The prevalence of hyperopia, or farsightedness (when nearby objects appear blurry), is 21% among children 6 months to 6 years[28] and 13% among children aged 5 to 17.[29] As with myopia, the prevalence varies by age and race/ethnicity.[29,30,31] Further, children of mothers who smoked during pregnancy have higher rates of hyperopia.[32] Untreated hyperopia compromises a child's readiness for learning by interfering with reading skills.[13]

Astigmatism is an irregularity in the shape of the cornea or lens that causes blurry vision at distances if not corrected. Depending on the diagnostic threshold used, 15% to 28% of children aged 5 to 17 years have astigmatism.[29] Children with refractive errors are more likely to have astigmatism[17] as well as those whose mothers smoked during pregnancy.[33]

Equity Matters in Vision

Socioeconomic and racial inequities impact health care in the U.S. Certain racial and ethnic groups face increasing challenges to health and well-being, which compromises healthy child development. Vision is essential to health and well-being. Equity in vision health and development means ensuring that all children are born in optimal health, receive age-appropriate screening, and have access to quality services to support good health.

What the Data Tell Us

The National Survey of Children's Health (2016–2017) includes data on social determinants of health, such as household income and educational level, and their association with vision testing for children 17 years and younger (Table 3 and Appendix A.) Some key findings include:[18]

- Non-Hispanic children aged 0–17 years whose primary language at home was not English had the lowest percentage of vision testing as compared to children in homes where English or Spanish were spoken (*Table 3*).
- Children in families with greater household income are more likely to have received vision testing.
- Children in families with adults that have a college education compared to those in homes with adults that did not complete high school or who have some college education are more likely to have received vision testing.
- Disparities in vision testing were identified in the survey. Children 17 years or younger with the following demographics were more likely to have received vision testing:
  - » private health insurance
  - » consistent health insurance within the last year
  - » a medical home or consistent health care provider
  - » being non-Hispanic and living in a home where English is the primary language.

Table 3.

Receipt of Vision Testing in Children Age 17 Years and Younger

Data from the National Survey of Children's Health 2016–2017. Survey Question asked: *Has the child ever (if 0–5 years of age) or during the past 2 years (if 6–17 years of age) had his or her vision tested with pictures, shapes, or letters?*

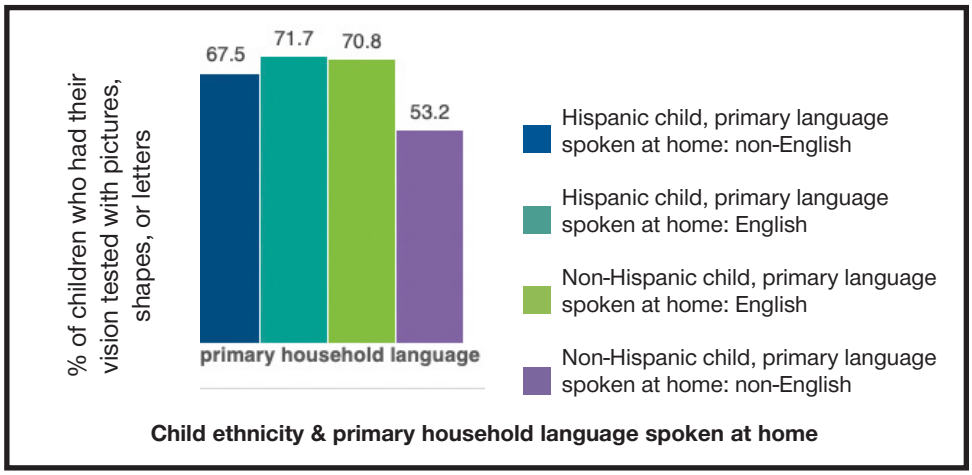
INSURANCE STATUS	% Tested	% Not Tested
Insured at time of survey	70.4	29.6
Not insured at time of survey	58.4	41.6
Consistently insured throughout past year	70.6	29.4
Currently uninsured or had periods without coverage	60.8	39.2
TYPE OF INSURANCE AT TIME OF SURVEY	% Tested	% Not Tested
Public insurance only	69	31
Private insurance only	72	28
Public and private insurance	71	29
Currently uninsured	58	42
INCOME	% Tested	% Not Tested
Household income 0-99% FPL*	67.7	32.3
Household income 100-199% FPL	67.8	32.2
Household income 200-399% FPL	69.2	30.8
Household income 400% FPL or greater	72.8	27.2
ADULT EDUCATION	% Tested	% Not Tested
Adult: Less than high school education	64.4	35.6
Adult: High school or GED	71.3	28.7
Adult: Some college or technical school	69.1	30.9
Adult: College degree or higher	70.5	29.5
MEDICAL HOME	% Tested	% Not Tested
Care met medical home criteria	72.2	27.8
Care did not meet medical home criteria	67.3	32.7
LANGUAGE SPOKEN AT HOME – HISPANIC CHILDREN	% Tested	% Not Tested
Primary household language is English, among Hispanic children	72	28
Primary household language is not English, among Hispanic children	68	33
LANGUAGE SPOKEN AT HOME – NON-HISPANIC CHILDREN	% Tested	% Not Tested
Primary language in household English	70.9	29.1
Primary language in household Other than English	62.9	37.1
SPECIAL HEALTH CARE NEEDS	% Tested	% Not Tested
Children with special health care needs (CSHCN)**	81	19
Non-CSHCN	67	33

* FPL: Federal Poverty Level
Source: https://mchb.hrsa.gov/maternal-child-health-topics/children-and-youth-special-health-needs#ref1

** Children with special health care needs, as defined by HRSA's Maternal and Child Health Bureau, "have or are at increased risk for chronic physical, developmental, behavioral or emotional conditions and who also require health and related services of a type or amount beyond that required by children generally."
Source: Child and Adolescent Health Measurement Initiative, 2019.[18]

Table 4.

Percentage of Children Receiving Vision Testing by Ethnicity and Primary Household Language in Children Age 17 Years and Younger 2016-2017

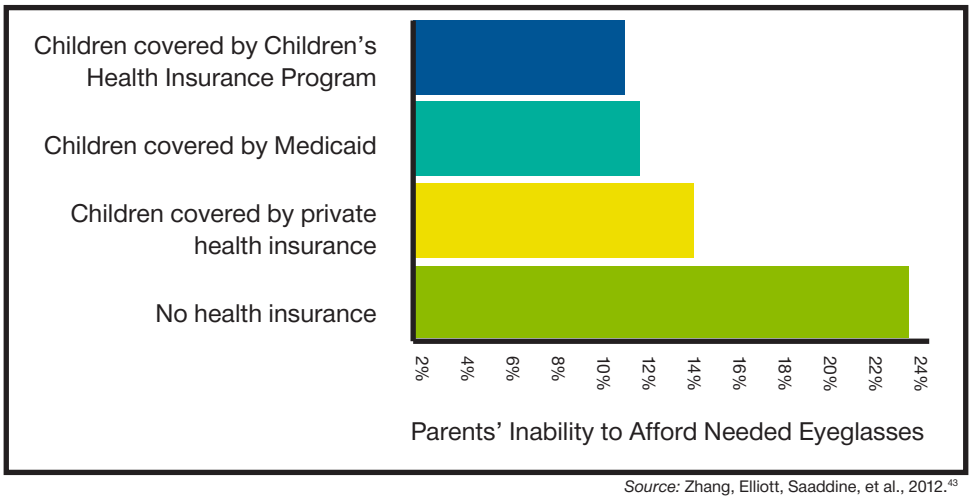


Source: Child and Adolescent Health Measurement Initiative, 2019.[18]

Children experiencing health and socioeconomic inequities have lower rates of vision testing, experience disparities in visual impairment, and reduced access to care. For example, a lack of health insurance impedes a family's ability to purchase eyeglasses (*Table 5*). It has been reported that Latino and African-American children were two to three times more likely to have unmet vision needs. Even with health insurance (public or private), only 15% of such children had a policy that included vision health.[43] An analysis of children's vision disorders in 2015 with projections to 2060 indicates significant increases in visual impairment among Hispanic, Asian-American, and multi-racial children 36 months to 72 months old[13] (*Table 6*). According to several studies, early detection, uniform systems of accessible care for all children, and referral completion to available eye care are critical components of an equitable system that will lead to improvements in children's health and learning.[44]

Table 5.

Parent Difficulty in Affording Needed Eyeglasses for Their Children by Child's Health Insurance Status (2004–2006)



Source: Zhang, Elliott, Saaddine, et al., 2012.[43]

Data from the National Survey of Children's Health 2016–2017 provide clear opportunities for improving equity for early detection and treatment of vision disorders in children. It is incumbent upon us to identify targeted outreach strategies benefiting children with special health care needs. Such strategies must also be targeted to children in lower-income households, in households with less formal education, those who are Medicaid/SCHIP recipients, those with inconsistent or no insurance, and those in which the household language is other than English (*Table 3, Table 4, Table 5, and Appendix A*).

Improving Vision Equity

Equality means treating everyone the same, while equity is giving everyone what they need to be successful (*Box 4*). Achieving and maintaining optimum vision health requires the right resources. We must strive for equity to achieve optimum vision health. The report from the National Academies of Sciences, Engineering and Medicine (NASEM), *Making Eye Health a Population Health Imperative: Vision for Tomorrow*, reminds us to address "questions about broader conditions that may prevent access to existing eye and vision services."[21] Access to care is one of

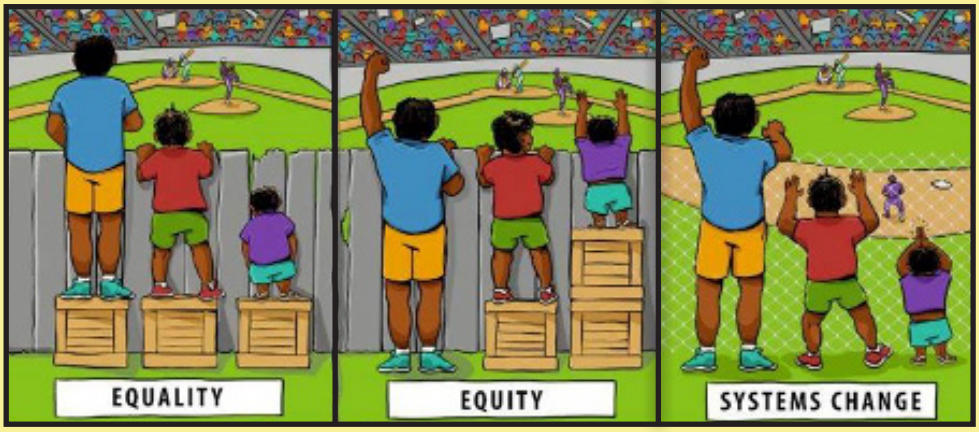
Table 6.

Visual Impairment in Preschool Children Aged 36–72 Months by Race/Ethnicity, 2015–2060

Race/Ethnicity	2015		2060		Δ2015–2060	
	No.	%	No.	%	No.	%
African American	42,831	24.5	48,518	22.0	+5,687	+13.3
Hispanic	65,782	37.7	96,110	43.6	+30,328	+46.1
Asian American	5,049	2.9	9,154	4.2	+4,105	+81.3
Other Minority	3,693	2.1	3,592	1.6	-101	-2.7
Multi-racial	11,315	6.5	26,779	12.1	+15,464	+136.7
White	45,922	26.3	36,422	16.5	-9,500	-20.7
Total	174,592	100.0	220,575	100.0	+45,983	+26.3*
Uncorrecte RE	120,591	69.1	154,057	69.8	+33,466	+27.8

Source: Varma, Tarczy-Hornoch, & Jiang, 2017.[13]

Box 4. Equity Graphic



Source: Adapted from Duke University Talent Identification Program

the many forms of health inequity. To assure equity **we must ensure the right resource, for the right person, at the right time, and in the right way—in every case and across multiple platforms** (*please refer to Appendix A for differences among states in vision testing rates, and among ethnic groups, and ages.*).[11]

It is important to consider the role of cultural factors in health service, according to the 2019 WHO report, World Report on Vision.[11] For example, indigenous peoples are more likely to access eye care if it is culturally appropriate and well-integrated within their community-based health service.[45] Similarly, higher levels of patient engagement and satisfaction have been reported when similarities exist in language and/or ethnicity between patients and health care professionals.[46] In some cultures, gender-sensitivity may arise when care is provided by a health care worker of the opposite gender.

For children, a foundation for equity requires:[47]

- creating systems and supports that improve adherence to recommended vision assessments and interventions
- reimbursement strategies for sustainable, in-school vision care programs, and
- increased uniformity of state-level policies on early detection and surveillance of vision disorders (*Appendix B*).

These foundational efforts can mitigate longstanding inequities and long-term systems change in children's vision.[37]

National Guidance and Recommendations

In a 2016 report, *Making Eye Health a Population Health Imperative*, the National Academies of Sciences, Engineering, and Medicine (formerly the Institute of Medicine) called for increased consensus and uniformity in clinical practice guidelines among diverse stakeholders (including eye care professionals, other care providers, and public health professionals) addressing children's vision and eye health.[21] The report promotes development of a comprehensive public health approach to vision that incorporates evidence-based vision screening procedures along with access to comprehensive eye care for those who do not pass a vision screening. As such, it is important to be aware of national recommendations that drive vision and eye health practices in various settings, ensure that procedures are being implemented, and promote measures of accountability if improvement in the national coordination of vision health for children is to occur.

Primary Health Care

Currently, organizations such as the American Academy of Pediatrics and its Bright Futures[56] and the American Academy of Ophthalmology Preferred Practice Patterns[57] provide national policies and guidelines for vision screening and eye health as a part of primary health care. The U.S. Preventive Services Task Force also recommends vision screening at least once for children between the ages of 3–5.[8] National pediatric preventive care guidelines include vision screening by pediatricians at well-child visits with quantitative measurement of vision yearly at ages three through six and then at regular intervals through late adolescence.[39] These guidelines are intended for implementation of a vision and eye health program within a clinical health care setting. Medicaid offers enrolled children a comprehensive benefit called Early and Periodic Screening, Diagnostic and Treatment (EPSDT), generally referred to as a "well-child check-up" by a primary care provider. At a minimum, EPSDT must include an age-appropriate vision assessment (including a vision screening) and services to correct or ameliorate vision disorders, including eyeglasses.[58] If a screening identifies a possible vision disorder, a referral to an eye care provider and further evaluation is in order. EPSDT requires Medicaid coverage of necessary diagnostic and treatment services, including further testing and eyeglasses through a comprehensive eye examination, even if the services do not cover adults.

Pediatric vision care is an essential health benefit under the Affordable Care Act (ACA). All new individual and small group health insurance plans, regardless of whether they are part of the ACA's Health Insurance Marketplace (also called "Exchanges"), must provide coverage of vision services for children younger than 19. Coverage for essential health benefits is defined by a "benchmark plan" in each state. If the benchmark plan does not include pediatric vision services, the benefits provided by either the Federal Employee Dental and Vision Insurance Plan (FEDVIP) or the state's Children's Health Insurance Program (CHIP) are used as supplements. A majority of states (42, including the District of Columbia) choose to use FEDVIP, which covers an annual eye examination and one pair of eyeglasses per year. (*Please refer to Healthcare.gov to learn the most current policies*.)