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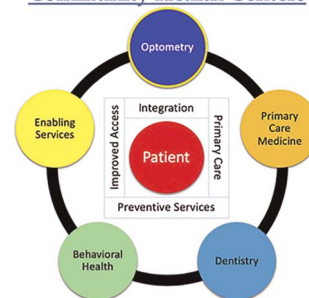
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Community Health Centers: A Model for Integrating Eye Care Services with the Practice of Primary Care Medicine

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SIGNIFICANCE: Optometry is desperately needed to combat the increasing rate of avoidable visual impairment that goes undiagnosed largely owing to the lack of integration of eye care services with primary care medicine. Government leaders are actively discussing substantive changes to health care legislation that will impact optometrists and their patients. The importance of a regular eye examination for disease prevention has long been undervalued in the setting of primary care. Consequently, many serious and potentially treatable ocular and systemic diseases go undiagnosed. Despite clear indicators that vision impairment increases the risk of morbidity and mortality from chronic systemic disease and decreases quality of life, vision health remains among the greatest unmet health care needs in the United States. To improve vision care services for all Americans, we must focus our attention on two central themes. First, we must educate the public, health care professionals, and policymakers on the importance of routine eye care as a preventive measure in the setting of primary care. Next, we need to recognize that optometrists, through their geographic distribution and advanced training, are in a strategic position to deliver integrated, comprehensive, cost-effective eye care services for individuals most in need. In this perspective, we discuss a model for integrating optometric services with the practice of primary care medicine to facilitate early detection of both eye and systemic disease while reducing serious and preventable health-related consequences.

Community Health Centers



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Health care planners, providers, consumers, and policy makers are increasingly aware of the urgent need to develop strategies that will result in the early detection and/or prevention of disease. Such strategies will reduce morbidity and mortality, improve quality of life, and provide a huge savings to the health care system. In this article, we provide evidence that integrating comprehensive eye care into the delivery of primary care can detect serious consequences of ocular and systemic diseases that frequently go undetected until irreversible damage has already occurred.

Vision health is currently among the greatest unmet health care needs in the United States.¹ Cost of care for the visually impaired currently exceeds U.S. \$51.4 billion annually,² and the global burden of uncorrected myopia alone is U.S. \$244 billion.³ A comprehensive eye examination can detect early signs of systemic (e.g., diabetes, hypertension, HIV/AIDS, autoimmune disease) and ocular disease (e.g., glaucoma, macular degeneration, cataracts). Accordingly, regular eye examinations have the potential to reduce serious morbidity and halt the rapidly rising costs.

As early as 1996, optometry was named in a National Academy of Medicine report as one of several first-contact health professionals that play an essential role in providing basic health services.⁴ Nearly a decade later, the Centers for Disease Control and Prevention declared vision loss a public health crisis, and optometry was named as a profession that performs desperately needed health care services.⁵ In September 2016, a report from the National Academies of Sciences, Engineering, and Medicine presented evidence that

eye and vision health is not adequately recognized as a population health priority and put forth a “call for action to transform vision impairment from an exceedingly common to a rare condition and to reduce related health inequities.”¹ Most recently, in December 2018, the U.S. Department of Health and Human Services collaborated with the Departments of Treasury and Labor to promote policy recommendations that enhance choice and competition in the health care workforce by preventing restrictions imposed by state regulators on nonphysician health care providers that limit the range of services they can provide.⁶ Despite these efforts, by 2050, nearly 7 million persons are projected to be visually impaired, which represents an increase of 115.8% and includes 63.3% of all individuals 80 years or older.⁷ Nevertheless, initiatives to improve eye health and the delivery of comprehensive eye care services remain notably missing from legislative agendas.

Nowhere is this oversight more problematic than in the delivery of health care services to the elderly, working poor, unemployed, and homeless populations. Currently, many public and private health insurance policies, including Medicare, do not cover the cost of eye examinations, corrective lenses, or visual assistive devices for asymptomatic or low-risk patients. Thus, many people must purchase additional vision insurance or shoulder out-of-pocket costs, further exacerbating overall health inequities among the populations least able to afford care. For example, African Americans and Hispanics are twice as likely to be blind compared with whites of the same age, largely owing to glaucoma and diabetic retinopathy.⁸ The elderly are especially

vulnerable to serious vision disorders, and health care cost is projected to increase substantially by 2035, when seniors will outnumber children for the first time in U.S. history.^{9,10} In children, detection of early vision conditions is crucial because 80% of classroom learning occurs through vision.^{11,12} One of every five students has a vision problem that could be detected with a comprehensive eye examination, and more than 80% of these problems are correctable with glasses.¹¹ Uncorrected vision disorders correlate with learning differences, poor school performance, poor athletic performance, and social problems that are detrimental to self-esteem and future employment opportunities.

Current shortcomings in eye care result largely from a lack of public awareness. For example, more than one-third of Americans incorrectly believe that school screenings are equivalent to a comprehensive eye examination and that children should receive their first examination at or after age of 5 years. Similarly, more than 50% of Americans are unaware that a comprehensive eye examination will detect diabetes, 79% do not know that diabetic eye disease can occur without any symptoms, and in a recent cross-sectional study, approximately only 20% of patients with mild/moderate non-proliferative diabetic retinopathy were aware that diabetes was affecting their eyes.^{13,14} These misconceptions must be addressed by educating health care providers and the public about the importance of routine eye care and that optometrists are ideally suited to identify patients at risk of vision loss. In turn, better eye health will improve employment opportunities, enhance job performance, support school performance, enhance mobility, maintain independence, improve home safety, and result in the earlier detection of systemic and vision-threatening disease.¹

OPTOMETRISTS AS PRIMARY EYE CARE PROVIDERS: THE ARGUMENT

Optometry offers the opportunity to deliver affordable, high-quality eye care to the American public. The number of adults who saw or talked to an eye care professional in 2015 ranged from 87.9 million to 99.5 million. Although the proportion of examinations conducted by optometrists versus ophthalmologists is debated,^{15,16} as ophthalmology becomes increasingly specialized, optometry's role as the provider of primary eye care is intensifying. The number of optometrists is predicted to increase by 10% between 2018 and 2028, which is substantially greater than the 7% average growth rate for all occupations over that same time period.¹⁷

After receiving their undergraduate degree and/or completing a series of prerequisite courses consistent with other premedical programs (e.g., medical, dental, veterinary), optometry students enter an intensive, 4-year professional program, where they receive didactic and clinical training specifically focused on the prevention, diagnosis, treatment, and ongoing management of vision disorders and ocular problems associated with systemic diseases. Optometric training programs have increased the number of didactic hours spent on the diagnosis and management of eye disease while also expanding the clinical training program. In the process of completing approximately 1600 hours in the classroom, professional optometry students work alongside both physicians and doctors of optometry to gain expertise in all areas of eye and vision care. By the end of their 4-year training program, optometry professional students have participated in approximately 2800 hours of direct patient care. Moreover, an increasing percentage of graduates complete an additional year of residency to enhance their clinical

expertise before going into clinical practice. With a comprehensive understanding of anatomy, physiology, pharmacology, optics, visual processing, and ocular and systemic disease, optometrists have become integral members of primary care practice and are optimally positioned to provide high-quality eye care services to patients and communities throughout the United States.

INTEGRATION: AN IMPORTANT OPPORTUNITY FOR EYE CARE

As the demand for eye care in the United States increases and the number of primary care physicians fails to keep pace with population growth,¹⁸ there is significant need to coordinate the delivery of eye care services with other health care professionals. Here, we use California as a microcosm to illustrate shortcomings in eye care delivery that exist at the national level, as well as a novel approach that California is taking to integrate eye care services with the practice of primary care medicine.

OPTOMETRISTS LEAD THE FIGHT AGAINST DIABETES

One of every three adults in California has diabetes, prediabetes, or undiagnosed diabetes.¹⁹ As a chronic disease that targets multiple body systems, diabetes requires an integrated team of health care providers to effectively manage. Currently, more than one-third of adults with diabetes have diabetic retinopathy, the most rapidly growing major eye disease and the leading cause of blindness in adults aged 20 to 74 years.^{20,21} For the past 3 years, health insurers offering managed care plans to California's Medicaid population (i.e., Medi-Cal Managed Care plans) have underperformed on diabetic eye care. The National Committee for Quality Assurance developed the Healthcare Effectiveness Data and Information Set (HEDIS) as a way to evaluate and ensure minimum quality standards of the nation's managed care industry. Among the six HEDIS measures used to monitor the management of diabetic patients (i.e., blood pressure control, retinal/eye examination, hemoglobin A_{1c}, hemoglobin control, blood sugar control, and kidney screening), scores from a HEDIS aggregate report for California's Medi-Cal Managed Care plans showed retinal evaluation of diabetic patients to be the performance metric least likely met.²¹ Accordingly, the percentage of Medi-Cal patients receiving comprehensive eye care remains below the Healthy People 2020 Advisory Committee goal developed by the Office of Disease Prevention and Health Promotion.²² This problem is compounded by the failure of many public and private health plans, including Medicare, to include regular, comprehensive eye examinations in their list of covered services. Unfortunately, many patients seek care only when significant vision loss has already occurred, and it is too late to prevent permanent vision impairment.

A MODEL OF INTEGRATED DELIVERY: COMMUNITY HEALTH CENTERS

The delivery of integrated primary care services in a team-based practice setting improves patient quality of life, reduces the use of acute care services, and lowers overall costs to the health care system.²³ The HEDIS data provide leverage to support policy initiatives

that improve primary care services provided to low-income communities by integrating optometric services with primary care physicians, dentists, mental health specialists, and pharmacists. Federally Qualified Health Care Centers (often referred to as Community Health Centers) provide one example of an integrated delivery model that is optimally positioned on a national level to incorporate eye and vision care services into the practice of primary care medicine. For more than 50 years, health centers have been delivering affordable, high-quality, cost-effective primary care that is accessible to medically underserved populations. Community Health Centers are nonprofit, tax-exempt, community-governed organizations located in high-need areas identified by the federal government. They are open to all community members and provide primary care services, including dental, behavioral health, and pharmaceutical and enabling services, as well as comprehensive screening programs and immunizations. Today, nearly 1400 health centers operate more than 11,000 service delivery sites nationwide, serving more than 27 million people.²⁴ Community Health Centers are one of the few places where eye care providers have the opportunity to work side-by-side with primary care physicians and other medical professionals to meet the physical, mental, oral, and vision care needs of each patient. Nevertheless, among the 27 million patients who visited Community Health Centers nationwide, including more than 6.2 million in California, only 2.47% received eye care services in 2017.²⁵ This is surprisingly low compared with the number who received dental (22.51%), mental health (7.54%), and enabling (9.38%) services within the Community Health Center system. According to the 2017 National Health Center Data, fewer than 800 vision care staff are employed at Community Health Centers, among which fewer than half are licensed optometrists ($n = 320$) or ophthalmologists ($n = 42$). These numbers pale in comparison with the more than 10,000 licensed mental health professionals at Community Health Centers and the nearly 18,000 personnel who provide dental services.²⁶

FAILURE TO INTEGRATE HINDERS ACCESS TO HIGH-QUALITY EYE CARE

A study from George Washington University in 2009 demonstrated that Community Health Centers are an ideal model to illustrate the economic advantages and improved health outcomes that result from direct, interprofessional interaction.²⁷ The report also pointed out that fewer than 20% of Community Health Centers provided on-site vision care, largely because optometry and vision care services are not explicitly defined as mandated services and thus are not included in the list of primary care disciplines that receive federal (Section 330) funding for Health Resources & Services Administration–defined services.^{27,28} This may be due, in part, to the misconception that vision care is a specialty service. It is well established that uninsured or underinsured patients receiving care at Community Health Centers have significant difficulty gaining access to off-site specialty services and therefore suffer poorer health outcomes compared with patients with Medicaid, Medicare, or private insurance.²⁹ Unfortunately, despite the Community Health Center's demonstrated value as a health care delivery model and the Affordable Care Act's efforts to improve access to high-quality primary care services, the percentage of Community Health Centers with on-site eye care has not significantly improved over the past 8 years. In fact, severe cuts to the Medicaid program threaten the delivery of basic primary and preventive care to the neediest

members of our communities. For example, current legislation does not include an annual dilated fundus examination in the list of essential health benefits covered by government and private insurers. Even though a fundus photo alone is considered sufficient to meet HEDIS criteria for diabetic retinopathy screening, only 17% of Community Health Centers without on-site eye care use telehealth services to capture digital images that are transmitted to an eye care professional off-site for interpretation. Moreover, although telehealth provides a cost-efficient screening tool, reports suggest that it may also lead to a false sense of security because the absence of retinopathy does not mean that the eye is free from other vision-threatening diseases (e.g., glaucoma, cataracts, retinal tears, macular degeneration, uveitis). Also, patients with retinopathy identified using retinal photography can encounter extensive wait times to see an eye care provider or are referred to another facility and subsequently lost to follow-up. Meanwhile, a large share of health plans continue to underperform on HEDIS quality measures, and patients continue to suffer from permanent visual impairment that could have been prevented through early detection.

POLICY CHANGES TO IMPROVE INTEGRATION

The integration of multidisciplinary health care services is paramount to the success of future initiatives to enhance preventive care. As frontline providers, optometrists are well positioned to improve health outcomes and reduce health care costs. Serving as the first line of defense against blindness, optometrists can detect and prevent serious ocular disorders in their own practice or by referring to an ophthalmologist for specialty medical or surgical care. Numerous health policy initiatives have been successfully undertaken over the past decade to promote vision care, but many additional opportunities exist. Table 1 provides examples of barriers and potential approaches to customize the current organizational structure of health plans and Community Health Centers to facilitate the delivery of on-site, preventive, vision care services performed by a licensed eye care provider.^{31–33}

PROGRESSIVE PARTNERSHIPS

The impact of health policy on spearheading efforts to improve eye care and medical services for Medicaid patients with diabetes is nicely illustrated by a progressive partnership recently established by the California Optometric Association, the California Primary Care Association, and California-based Community Health Centers. This working group joined with Anthem Blue Cross to implement the Diabetes Clinic Day program that provides essential health care services to its most vulnerable beneficiaries. The collaborative developed an innovative delivery model that leverages the resources of health plans and community clinics with primary care providers who have expertise in medical, visual, and behavioral health.³⁴ Notably, the latest HEDIS scorecard demonstrates progress in meeting quality measures with respect to the delivery of essential health care services to diabetic patients, including a dilated fundus examination.^{35,36}

THE FUTURE

Disparities in eye and vision care continue to have a profound impact on health status, quality of life, and the nation's health care

TABLE 1. Barriers and approaches to enhance the integration of eye care services

Barriers	Approaches
Optometry is not formally recognized as a primary care discipline within Community Health Centers (CHCs)	Professional organizations and patient advocacy groups must work side-by-side with providers, payers, and government officials to (1) review and modify policies regarding the delivery of optometric services at CHCs; (2) customize the current organizational structure of CHCs to include on-site vision care; and (3) include routine vision care in the list of essential health benefits covered by government and private insurers.
Optometry is not sufficiently integrated with primary care medicine	Establish partnerships between optometrists and primary care providers to facilitate the integration of on-site eye care clinics at CHCs and other multidisciplinary practice settings.
Lack of public awareness	Educate the public and health care providers about the importance of routine eye examinations to maintain visual health.
Shortage of eye care providers pursuing careers in community health	Establish partnerships between CHCs and schools of optometry to develop a new career path for providers to pursue careers in community health by (1) developing a workforce recruitment model and compensation package that can be utilized by CHCs; (2) working with the Association of Schools and Colleges of Optometry to develop affiliation agreements and clinical rotations at CHCs for students and residents; and (3) delivering presentations at local and national meetings that advance the call for eye and vision care services at CHCs.
Funding shortfall	<ul style="list-style-type: none"> • Work with federal policymakers, state health departments, government-run agencies, private health plans, and the governing boards of CHCs to ensure adequate coverage and reimbursement for eye care services and procedures. • Work with the National Association of Community Health Centers to develop funding opportunities and business plans for health centers interested in adding on-site eye and vision care services.
Lack of evidence-based research to guide policy decisions	<ul style="list-style-type: none"> • Establish a national surveillance system for eye and vision health.¹ • Support the further development and use of evidence-based clinical practice guidelines for eye care and other medical professions to screen, detect, monitor, diagnose, and treat eye disease.³⁰ • Bring academic researchers and local communities together with government, nonprofit, for-profit, and professional organizations to design and conduct health services research that establishes improved health outcomes and costs savings associated with integrated delivery models.
Lack of preventive eye care for the elderly	<ul style="list-style-type: none"> • Support associations, such as the American Optometric Association and the American Association of Retired Persons, to promote early detection of eye-related disease by lobbying for Medicare coverage of routine eye examinations.

costs. Adding eye care to the arsenal of primary care services has the potential to prevent millions of Americans from losing vision. Nevertheless, numerous financial and political barriers threaten the urgent call to reduce alarming rates of visual impairment in

our aging population. Important steps to address this public health issue must include a nationwide education campaign to reduce the incidence of preventable blindness while recognizing that optometrists are the primary care professionals poised to answer the call.

ARTICLE INFORMATION

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