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# Assessing the Need for On-Site Eye Care Professionals in Community Health Centers

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## Policy Brief

### **Assessing the Need for On-Site Eye Care Professionals in Community Health Centers**

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February 2009

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the American Optometric Association,  
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the National Association of Community Health Centers

## **Executive Summary**

Poor vision health severely impacts school and work performance, quality of life, and life expectancy, and results in billions of dollars in medical expenditures each year. While eye and vision problems are often associated with age, low income and racial and ethnic minorities also have elevated risk of eye problems. Federally-funded community health centers, which are mandated to provide comprehensive primary care in underserved communities, are often the only option to improve vision health for low-income residents.

With respect to certain chronic conditions, health centers are able to provide high quality care that meets or exceeds national benchmarks despite limited financial resources, a shortage of primary care providers, and greater health care demands. What is not well known, is the extent to which health centers are able to provide on-site professional vision care.

Our analysis found that seven out of 10 health centers do not staff on-site eye care professionals to provide comprehensive eye exams. Rather, many health centers rely on referral arrangements with local optometrists and ophthalmologists for such services.

Major barriers to providing on-site comprehensive eye care services include the inability to afford necessary space/equipment and the perceived lack of reimbursement or inadequate reimbursement from Medicaid, Medicare and private insurers. Health centers indicated also that they also need assistance in developing a business plan, designing space, and developing an inventory of eye care equipment.

While the lack of health insurance coverage, differences in Medicaid coverage and benefits across states, and inadequate reimbursements are likely to limit capacity and access to vision care professionals, another challenge may be patient's general lack of understanding about the need for routine eye exams. Therefore, strategies to improve access to vision care must go beyond developing financial incentives and restoring eye care professionals for eligible placements in underserved communities, to include education about the importance of routine eye care exams.

## **Introduction**

Poor visual health can adversely affect school and work performance, and result in billions of dollars in unnecessary medical care.<sup>1</sup> However, vision care remains one of the greatest unmet health care needs in the country, as evidenced by the recent move by the Centers for Disease Control and Prevention to convene a panel of experts and stakeholders to address poor vision health and lack of access to vision screening and eye exams as a major public health crisis.<sup>2</sup>

Although the literature indicates that early detection and treatment of eye diseases and disorders could prevent many of the disabling vision problems that plague children, adults, the elderly, and those with related chronic health conditions, studies show few actually receive preventive comprehensive eye exams.<sup>3,4</sup> Additionally, the research indicates that comprehensive eye exams conducted by an optometrist or ophthalmologist can lead to fewer undiagnosed problems.<sup>5</sup> Comprehensive eye exams that include tests beyond screening with eye charts are considered to be more effective as even trained eye care professionals, using general screening procedures, can fail to identify vision diseases or disorders.<sup>6</sup>

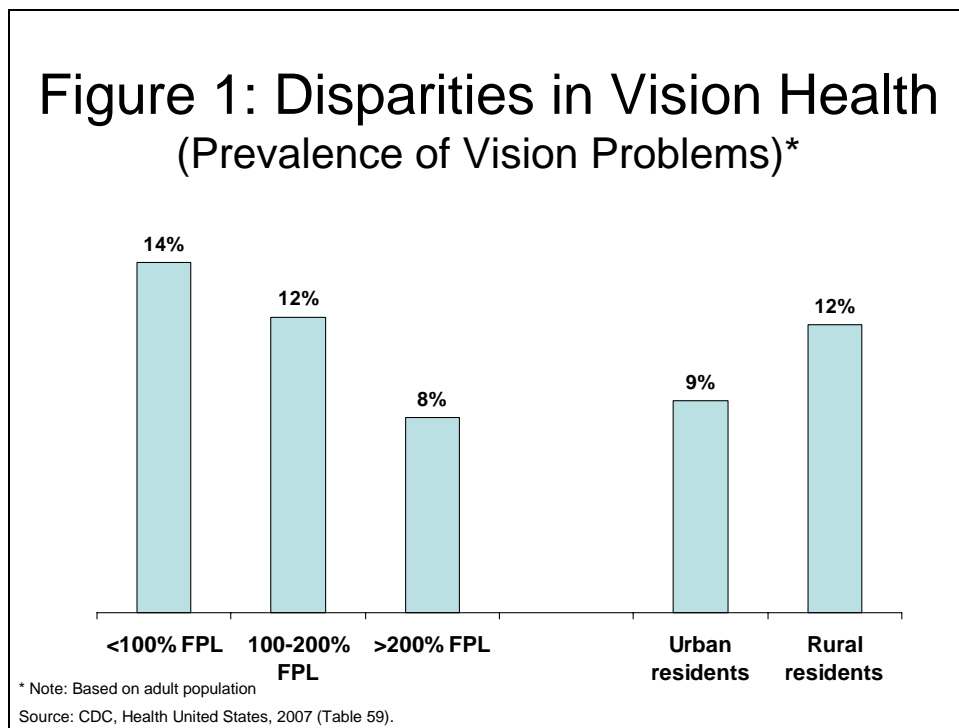
Because comprehensive eye exams are not acknowledged as an essential primary care service, most Americans receive vision exams only after noticing significant vision problems. However, in many cases, once the problem becomes noticeable it is too late to prevent permanent damage, and may result in reduced quality of life and lower life expectancy, as well as higher medical care costs down the line.<sup>7,8</sup> For example, a recent evaluation of persons with diabetes found that many vision problems could have been corrected if they had been properly diagnosed—among the 11 percent of diabetic adults with vision problems, 66 percent were correctable if diagnosed early.<sup>9</sup>

The study also found that only 22 percent of children received some type of vision screening, and of this group, only 15 percent received a comprehensive eye exam.<sup>10,11</sup> Of the estimated 61 million adults at high risk for serious vision loss, only 42 percent had received a dilated eye exam in the past year.<sup>12</sup>

While vision impairment is highly associated with increasing age, certain population groups are at particularly high risk of poor vision health. As Figure 1 illustrates, rural populations and low-income groups appear to be at higher risk for vision problems compared to wealthier and urban Americans. In addition to general financial and insurance coverage barriers, the lack of access to qualified vision care professionals also presents a major challenge for persons in low-income communities and geographically isolated and medically underserved areas, including rural areas.<sup>13</sup>

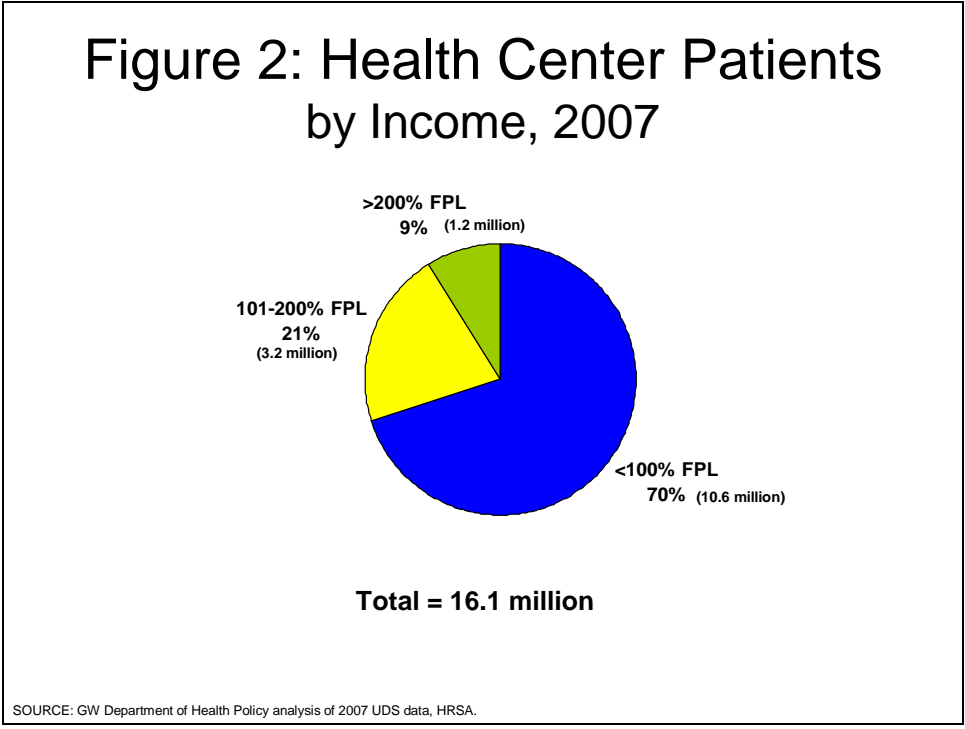
Racial and ethnic minorities are also at high risk for preventable eye disease.<sup>14</sup> One recent study found that 41 percent of Latino individuals had not seen or heard anything about eye disease in the past 12 months, far more than Asians (28%), Blacks (26%) and Whites (16%).<sup>15</sup> Although lack of health insurance coverage, state differences in

Medicaid benefits, and inadequate reimbursements are likely to limit capacity and access to vision care professionals, some of the most difficult challenges to providing on-site eye care are related to the lack of understanding about the need for routine eye exams. One study examined a primary care clinical setting and found that roughly one-third of those affected by eye disorders were unaware of their disease status.<sup>16</sup> Another study found that approximately 50 percent of respondents who did not have an eye exam in the previous year claimed they did not have a reason to have one.<sup>17</sup> The NEI found that many patients do not see an eye care professional because they consider it “not necessary” and only do so when their vision is significantly impaired.<sup>18</sup> On the other hand, fear of undergoing surgery or other procedures necessary to correct vision problems also posed a major barrier. In effect, any efforts to improve patient access to vision care should include efforts to increase public awareness and knowledge about vision care.

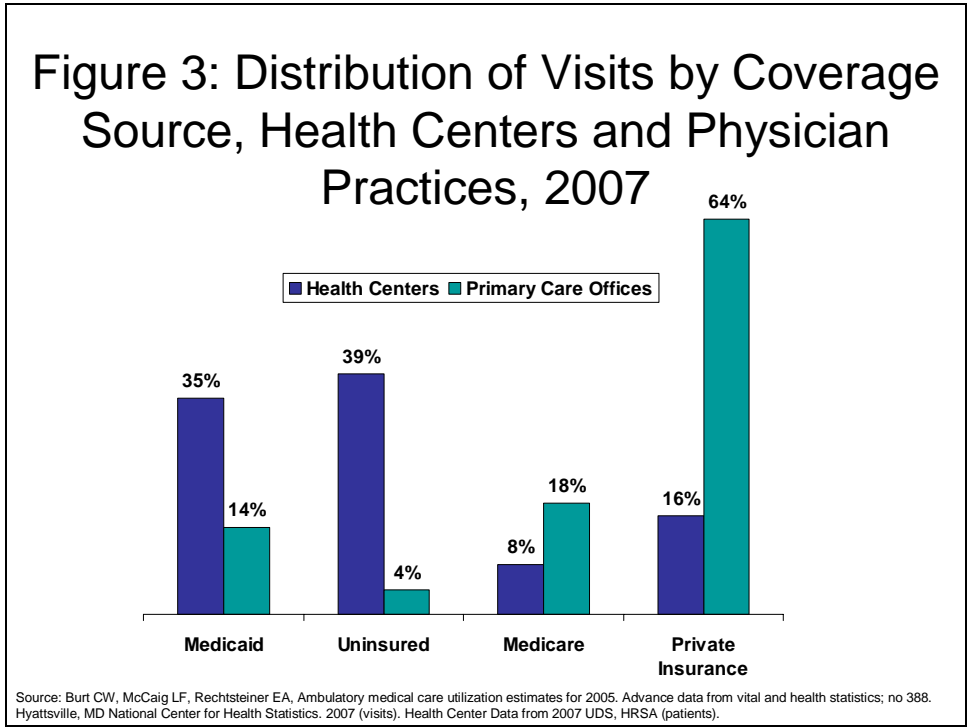


In low-income and underserved communities, federally-funded community health centers are generally the primary, if not the only, gateway to vision care for low-income and medically vulnerable residents. Health centers are federally mandated to provide comprehensive primary care to all residents, regardless of income, and to provide enabling services, such as translation, care management, and transportation, to make effective the medical care provided. Governed by a patient majority board, health centers are required to regularly assess community health care needs and tailor their services accordingly.<sup>19</sup> Depending on financial and community resources, such as the availability of specialists and other providers, and the perceived level of urgency and importance, health centers may offer services on-site or establish referral arrangements.

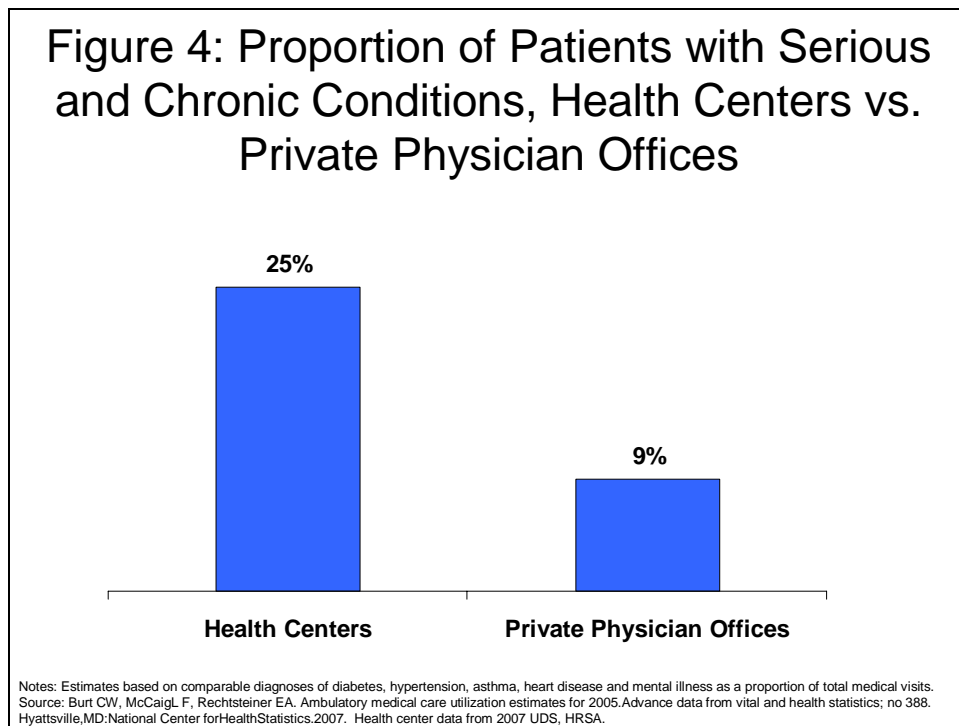
In 2007, 1,067 health centers served 16.1 million patients. Figure 2 shows the majority of health center patients have very low-incomes; nearly seven out of 10 patients have incomes less than or equal to the federal poverty level (FPL).<sup>20</sup> Less than nine percent of patients had incomes above 200 percent of FPL. Health centers also largely serve a racial/ethnic minority population, with approximately two-thirds of patients categorized as non-white.



Because health centers are located in low-income and medically vulnerable communities, most health center patients are either uninsured or covered under Medicaid. Figure 3 illustrates that 39 percent of health center patients are uninsured and 35 percent have Medicaid. In contrast, other primary care providers tend to have a much smaller proportion of uninsured and publicly-insured patients.



Given the health risks associated with low socioeconomic status, it is not surprising to find health center patients tend to have a greater proportion of patients with serious and chronic conditions. Figure 4 shows health center patients are nearly three times more likely to have a serious or chronic condition compared to those in other primary care settings. Given the higher prevalence of chronic conditions, health centers are likely to also be at high risk for associated eye disease and disorders, including diabetic retinopathy. Other well-known factors such as lack of access to affordable coverage and services, the lack of available eye care professionals, and perceived lack of knowledge about their risks for vision impairment and blindness, are also likely to contribute to higher prevalence of poor vision health in underserved communities.<sup>21,22,23</sup>



With respect to certain chronic conditions and preventive health services, numerous studies show health centers are able to provide high quality care that meet or exceed national benchmarks despite limited financial resources, a shortage of primary care providers, and greater health care demands.<sup>24,25</sup> Health centers effectively use the medical home concept, in which a team of medical professionals coordinate and integrate a mix of evidence-based behavioral, social, clinical, and enabling services to improve patient health outcomes, as well as to change patient behavior to minimize health risks. What is not well known, however, is the extent to which services provided by eye care professionals are included as part of this team based approach in which patients may be able to get on-site vision screening and testing during routine patient visits.<sup>26</sup> That is, primary care physicians play a critical role in ensuring patients get appropriate prevention services, and according to the NEI survey, 96 percent of adults say they would be somewhat or very likely to seek an eye exam from an optometrist or ophthalmologist if recommended by their primary care physician.<sup>27</sup>



In the past, optometrists participated in the National Health Service Corps (NHSC) program, serving in underserved communities, and in particular health centers, in exchange for educational loan subsidies.<sup>28</sup> While optometry is no longer eligible for the NHSC program, some health centers appear to recognize the importance of vision care and partner with optometry residency programs<sup>29</sup> as well as some ophthalmology residency programs to ensure access to eye care.<sup>30</sup>

At the same time, health center capacity is limited due to general maldistribution and shortage of primary care and specialty providers and limited financial resources. Therefore health centers regularly assess and evaluate community health care priorities and use finite resources to arrange for care either directly on-site or through other arrangements to meet community needs.

The Health Resources and Services Administration (HRSA), which administers the Community Health Center Program, indicates that health centers use a variety of informal and formal arrangements to provide the services. Table 1 shows vision screening are conducted by 93 percent of health centers, but only 28 percent report that dilated eye exams are performed for individuals with diabetes and less than 18 percent have optometrists on-site providing comprehensive eye examinations. The final column suggests nearly all health centers provide some type of vision screening or care via referral or direct on-site access. While comprehensive eye exams and specific testing by an eye care professional are recommended for populations at high risk for vision problems, the HRSA data in Table 1 do not specify if comprehensive exams are performed or type of professional, test or equipment that should be used to identify vision problems.<sup>31,32</sup> In some cases, visual acuity screening or the use of eye charts can help identify onset of visual impairment, but the National Eye Institute (NEI) of the National Institutes of Health recommends more intensive exams and testing to detect eye conditions that can lead to serious impairment or blindness without early treatment.<sup>33,34,35</sup> Although ‘Optometry’ and ‘Dilated eye exam for diabetics’ measures both general and one-specific practice, it does not tell us the extent to which health centers have the necessary equipment and space to conduct such tests, or the types of barriers they face to build such capacity.

**TABLE 1: Delivery of Vision Care Services at Community Health Centers, 2007**

Services	On-site	By Referral & Grantee Pays	By Referral & Grantee Does Not Pay	Provides On-site and/or by Referral
Vision screening	93%	9%	48%	99%
Dilated eye exam for diabetics	28%	16%	77%	96%
Optometry	18%	13%	84%	96%

Notes: “Onsite” includes services rendered by employees, contracted providers, volunteers and others who render services in the health center's name. Referrals indicate that services are provided through formal and contractual referral arrangements. Health centers may deliver care through more than one method.

HRSA definitions: Vision screening is defined as “diagnostic services to identify potential vision problems.” Dilated Eye Exam For People With Diabetes is defined as “an examination in which the pupils are dilated in order to check for diabetic eye disease.” Optometry is defined as “services provided by a medical professional licensed or certified to diagnose, treat and manage diseases and disorders of the visual system, the eye and associated structures as well as diagnosis of related systemic conditions.”

Source: 2007 Uniform Data System, Bureau of Primary Health Care, Health Resources and Services Administration, DHHS.

Funded by the New England Eye Institute, the American Optometry Association, the Massachusetts League of Community Health Centers, and the National Association of Community Health Centers, this study examines the need for on-site comprehensive vision care in community health centers and the challenges health centers face to improve vision health.

**Methodology**

The survey was administered electronically to a random sample of 300 federally qualified health centers over six weeks between November and December 2008. The profile of the selected health centers reflects the general patient and urban/rural location of all 1,040 health centers (excluding 27 health centers from the U.S. Territories). The survey was sent by The George Washington University with additional reminders from the National Association of Community Health Centers to help maximize the response rate. The final response rate was 33 percent with 100 of 300 community health centers respondents.

The respondent health centers were slightly more likely to be urban than the national average but this difference was not statistically significant. Fifty-two percent of the

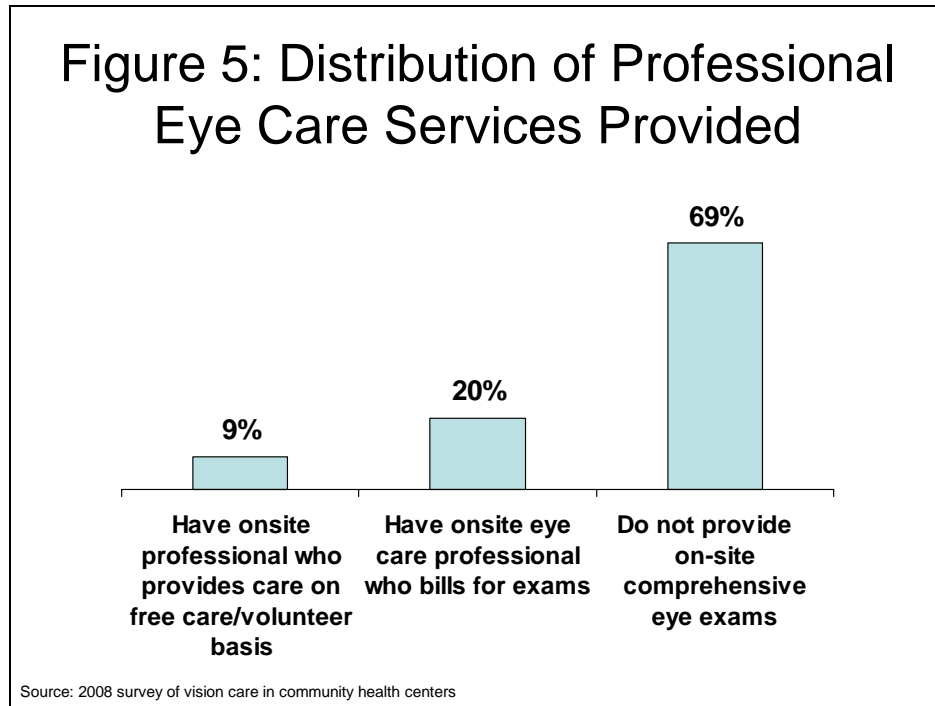
respondent health centers were urban health centers; the national composition of community health centers is 48 percent urban. While the respondent health centers were fairly evenly dispersed throughout the four census bureau regions (25% Northeast, 27% South, 20% Midwest, 28% West), nationally, health centers tend to reside more in the South (18% Northeast, 36% South, 19% Midwest, 27% West). Additionally, the respondent health centers were slightly more likely (54% vs. 50%) to be large health centers (more than 10,000 patients). Though there are slight differences in these health center characteristics, they are not statistically significant at the .05 level. The patient mix of responding health centers also closely reflect the patient mix of health centers nationally (Uninsured 41% vs. 40% nationally; Medicaid 36% vs. 35% nationally; Medicare 7% vs. 8% nationally; other public 2% vs. 2% nationally; private 15% vs. 15% nationally). For further comparison, please see the appendix.

Although no significant differences were found between the respondent sample and national population of health centers, the findings should nevertheless be interpreted with caution given the small sample size response rate of 33 percent. A number of factors may account for responding or not responding to the survey, including perceived level of need for vision care, convenience, and level of knowledge for completing the survey. To minimize bias and misinterpretation of the results, we exclude from our findings any responses or cross tabulations with very small counts of less than five.

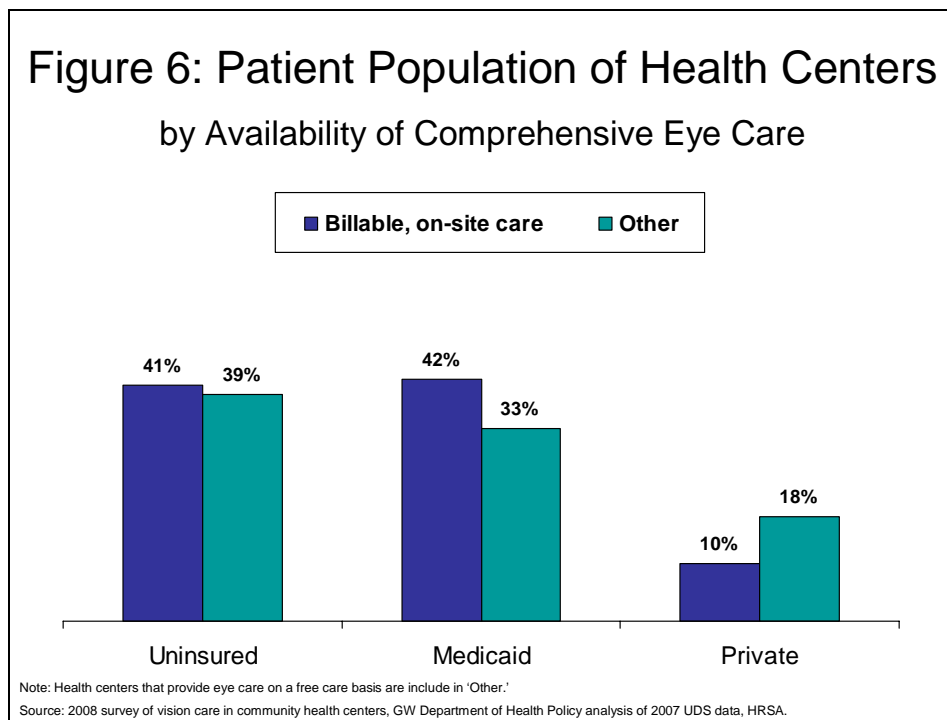
In order to adjust for non-response, the results of the survey were weighted by health center size and geographic region to reflect the national sample of health centers in the 2007 UDS. Size was determined by the total number of patients served annually. Centers were categorized into three groups, 1) less than 5,000 patients, 2) 5,000 to 9,999 patients, and 3) 10,000 or more patients. Health centers were placed into four geographic regions using the Census Bureau's Regions and Divisions. Regions include the following: Northeast, South, Midwest, and West. Given the similarity with the national population of health centers, we note that the weights had very small impact on the final estimates. As a result of the non-response to specific questions as well as the weighting of the results, some of the figures below show percentages that do not total 100 percent.

## **Findings**

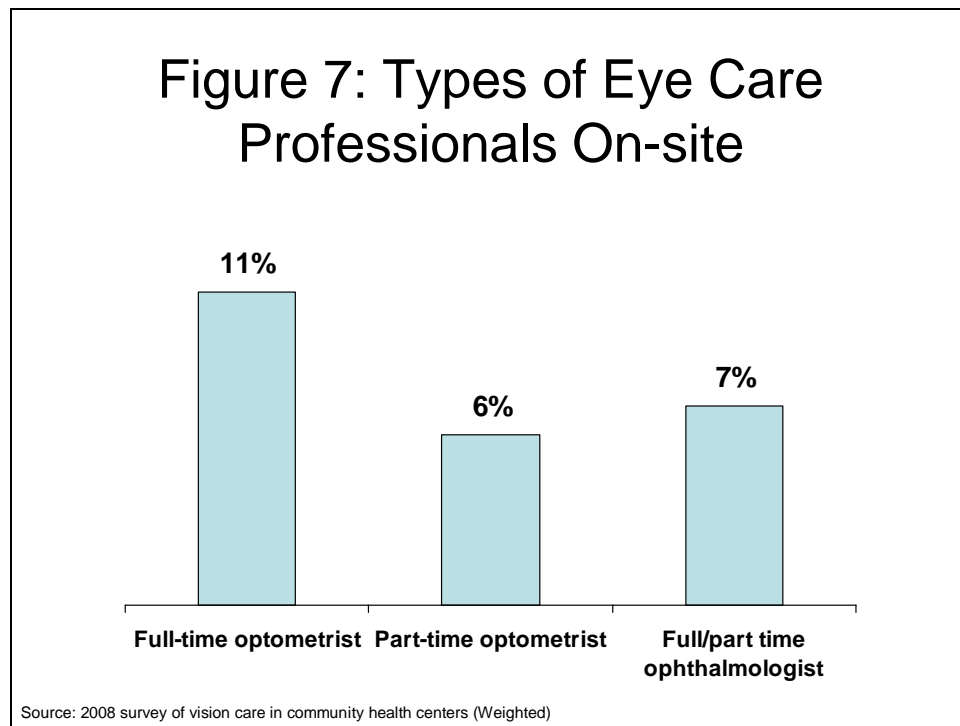
The results indicate that the vast number of health centers do not have an on-site optometrist or ophthalmologist who bills for comprehensive eye exams. As shown in Figure 5, only 20 percent of health centers have an onsite eye care professional. This mirrors the 18 percent of grantees reporting they provide optometry services to patients in the 2007 UDS. Approximately nine percent of health centers indicated optometry or ophthalmology services are provided on a free care/volunteer basis (i.e., donated services).



There are several differences between health centers which offer comprehensive eye care and those which do not offer eye care, such as patient mix. As seen in Figure 6, health centers which provide on-site comprehensive eye exams have on average a slightly higher Medicaid population (42% compared to 33% for centers that do not provide on-site comprehensive eye care). Health centers that provide on-site care also tend to have a lower percentage of private insurance patients; health centers with on-site comprehensive eye care are comprised of 10 percent private insurance patients compared to 18 percent in health centers that do not provide comprehensive eye care. Health centers which do not provide eye care on-site have a slightly smaller percentage of uninsured patients (39%), compared to those that provide comprehensive eye care on site (41%). Given the small number of health centers with on-site responding to the survey, no statistical test was conducted.

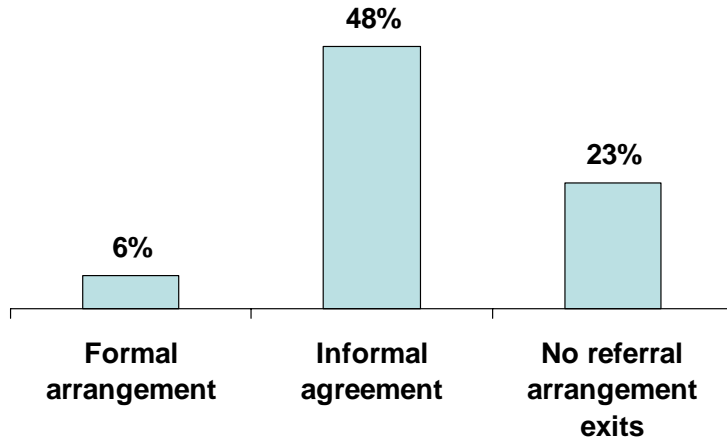


Health centers with on-site eye care also tend to utilize different types of staff to fulfill their eye care needs. Eleven percent of the health centers report having full-time eye care professionals (full-time classified as 36 hours or more per week). The majority of health centers with paid eye care professionals utilize optometrists to staff their centers (Figure 7). Six percent of the centers report having part-time optometrists. Only seven percent of the health centers have a part or full-time ophthalmologists—and none of the rural respondents reporting having any ophthalmologists on-site.



Though the majority of health centers do not have on-site comprehensive eye exams, they indicate patients are able to access care through other arrangements. Many of these health centers that do not provide on-site eye care use informal agreements (48%), including verbal agreements, with optometrists and ophthalmologists to provide comprehensive eye care for their patients. Only six percent of health centers report having formal legal or contractual agreements for referral services. Approximately 23 percent of respondents indicate they do not use any arrangement largely due to perceived lack of need or lack of available eye care professionals in the area. In contrast to the HRSA data, a higher proportion of respondents' appear to lack any arrangement for vision care. However, this discrepancy may be due to inaccuracies within the definition of the categories, response bias, or changes in referral arrangements since submission of their information in 2007.<sup>36,37</sup>

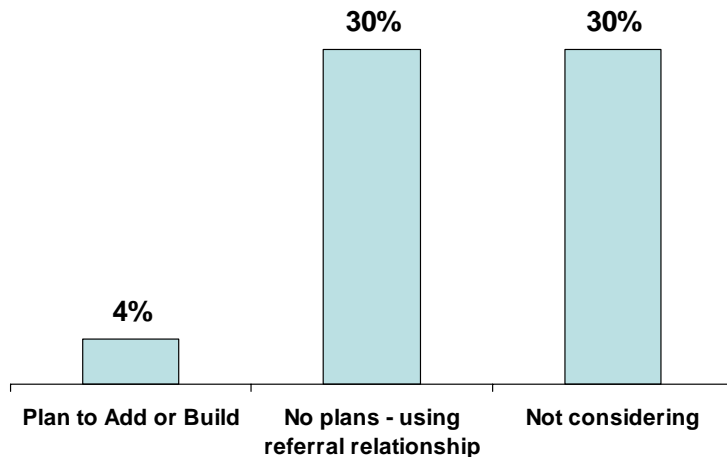
**Figure 8. Types of Arrangements Used by Health Centers Without On-site Eye Care Professionals**



Source: 2008 survey of vision care in community health centers (Weighted)

When asked about their plans to expand or build capacity for on-site eye care, only four percent of respondents plan to do so in the next 12 months. As displayed in Figure 9, those noting they are not planning to add on-site eye care either already have an off-site referral relationship (30%) or they do not consider on-site eye care necessary (30%).

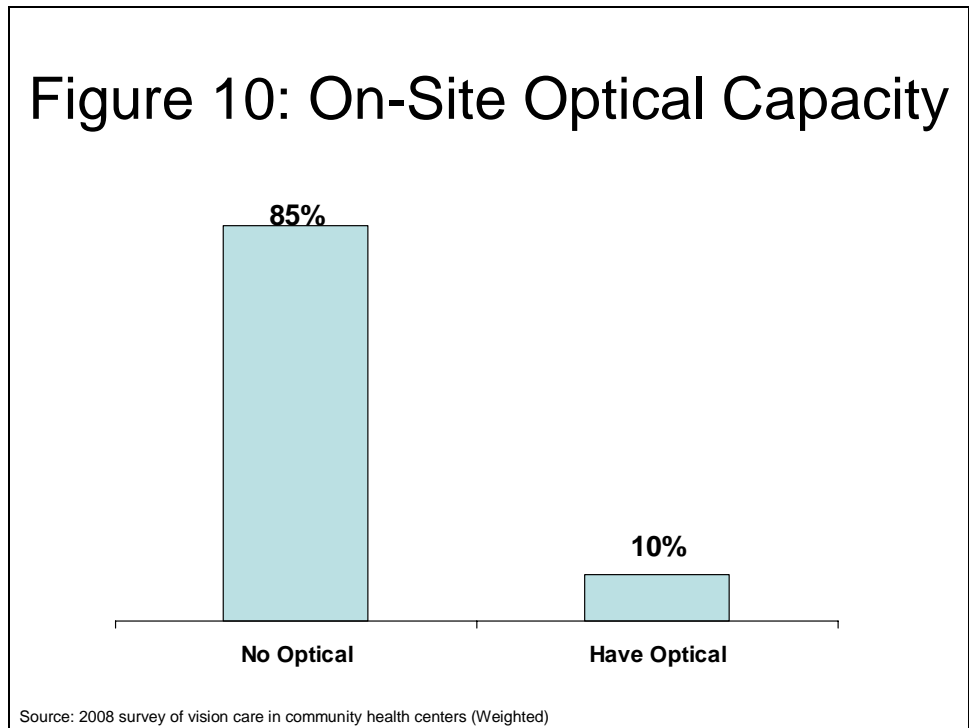
**Figure 9: Percent of Health Centers without On-site Vision Care that Plan to Add or Build Capacity Over the Next 12 Months**



Source: 2008 survey of vision care in community health centers (Weighted)

In the absence of on-site eye care professionals, some health centers rely on telehealth services for eye care. These services involve a retinal camera with digital images transmitted and professionally interpreted -- this survey did not specify whether these services include other eye health or refractive services. Approximately 17 percent of health centers without an on-site eye care professional reported utilizing telehealth services.

Approximately 90 percent of health centers that have an onsite eye care professionals also have separate eye exam rooms which are properly equipped to conduct comprehensive dilated eye exams and refraction. Overall, only 10 percent of health centers have on-site optical space with an eyeglass frame inventory for patients to select, order, pick up, and have adjustments to complete eyeglass orders. Figure 10 shows the vast majority (85%) of respondents do not have on-site optical devices.

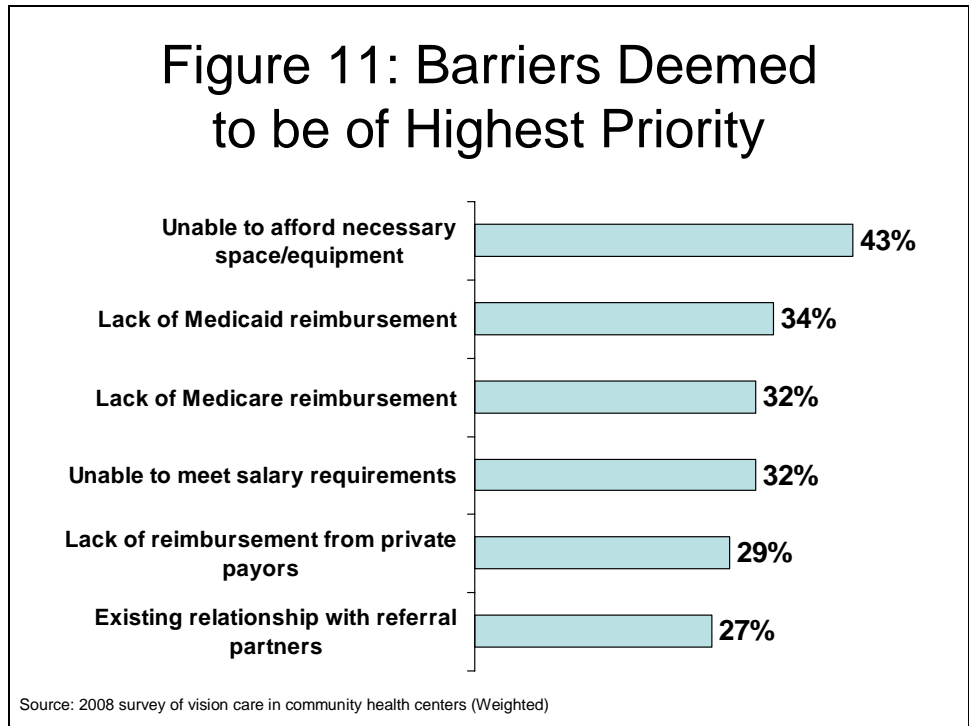


Only a few health centers that do not provide comprehensive eye care indicated they have plans to expand or build capacity in the near future. More than three out of four health centers say they have no plans to find space for eye care in the next twelve months. Furthermore, 73 percent of health centers do not plan to purchase instruments or equipment to provide comprehensive eye care over the next year. Only ten percent of health centers report plans to expand space for eye care in the next year and less than 11 percent of centers plan to make purchases to expand their eye care capabilities.

Health centers report numerous barriers affecting their ability to provide on-site comprehensive eye care by an optometrist or ophthalmologist. As illustrated in Figure

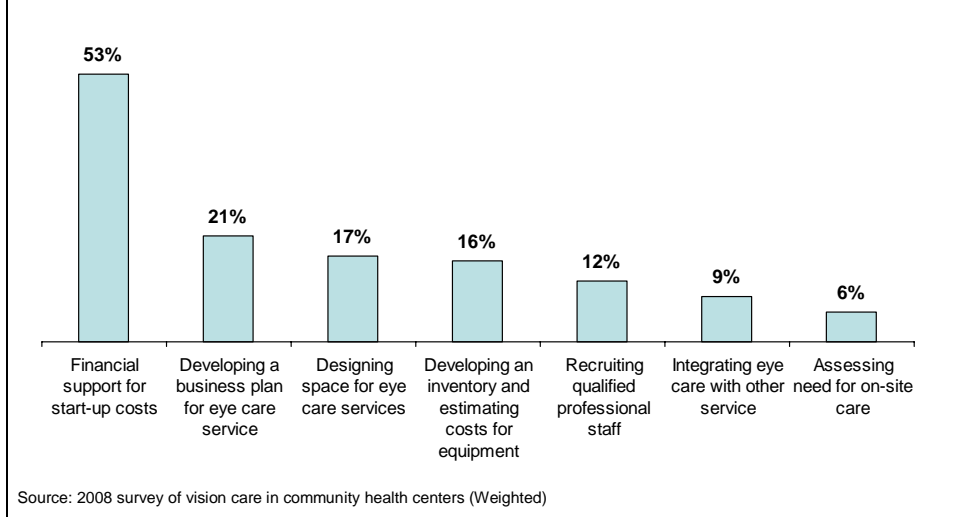


11, the top barriers flagged as “very important” factors inhibiting on-site comprehensive eye care are unable to afford necessary space and/or equipment (43%), lack of adequate reimbursement from Medicaid reimbursement (34%), Medicare (32%) and private insurers (27%) and unable to meet salary requirements” (32%). Finally, more than one in four health centers note that existing relationships with referral partners that provide free or reduced cost services for patients referred by health centers served as a disincentive to providing comprehensive eye care on site.



Health centers report numerous areas where technical assistance is necessary to build or expand on-site capacity of comprehensive eye care. The single most important area in which additional assistance is needed is in the form of financial support for start-up costs, where 53 percent of health centers overwhelmingly reporting the need for additional capital. As shown in Figure 12, the other top areas of need include developing a business plan for an eye care service (21% of centers), designing space for eye care services (17%), and developing an inventory and estimating costs for equipment and instruments (16%).

## Figure 12: Types of Technical Assistance Needed



When asked to comment further on any of their responses, the majority of the respondents recognize vision care is an important element of primary care, but note that the health center patients had more immediate priorities, such as dental care and mental health care. Also notable, several health centers indicate that they had agreements with eye care professional schools. Finally, a few centers note there are several eye care professionals who provide care on a reduced cost basis for low income individuals through referral arrangement, and fear hiring a provider would directly increase competition and reduce access to those providers who are already caring for health center patients.

### **Conclusion**

The findings indicate health centers recognize the need to provide and improve access to eye and vision care. However, the survey shows a number of factors significantly affect their capacity and preference to staff eye care professionals, including perceived lack of policy and lack of perceived need for on-site care, as well as the need for financial support and technical assistance in developing capacity and accurately assessing community need for vision care.

Similar to other health services, lack of insurance and inadequate payment are perceived to be the principle reasons individuals are not obtaining comprehensive eye examinations and treatment.<sup>38,39,40</sup> For example, children without health insurance are nearly twice as likely to have an unmet need for vision care as their insured counterparts.<sup>41</sup> While uninsured children are less likely to receive vision care, one study examining access to care for children found that individuals with Medicaid, S-CHIP or other forms of public coverage were more likely to have their vision care needs met than those with private

insurance.<sup>42</sup> Analysis of health center financial data also indicates private insurers tend to pay health centers less than cost – and less than half what Medicaid pays – which may discourage health centers to build and expand on-site capacity.<sup>43</sup>

Although greater access to preventive eye exams allows individuals to have conditions diagnosed, treated and controlled before loss of vision becomes severe or untreatable, few third party payers mandate such coverage. Under current Medicaid rules, only children who qualify for Early Periodic Screening, Diagnosis and Treatment (EPSDT) are entitled to vision examination and treatment services, including eye glasses. In contrast, SCHIP benefits for children can vary significantly from state to state in coverage of vision care services.<sup>44</sup> In general, only Alabama, Arkansas, Colorado, Maine and West Virginia specifically mandate direct access to eye care professionals.<sup>45</sup>

In addition to varying health care coverage, a lack of standardized state vision exam and screening requirements for children contribute to missed opportunities to diagnose eye problems.<sup>46</sup> Approximately 16 states have no eye exam or vision screening requirements for children entering school or during the school year.<sup>47</sup> Only Kentucky, Missouri and Illinois have legislatively mandated eye examinations for pre-school children and two states (Massachusetts and Ohio) have mandated eye examinations for children newly referred to special education programs.<sup>48</sup> One study found that 41 percent of children would be properly diagnosed and successfully treated for vision problems if all children had received comprehensive eye exams.<sup>49</sup>

Nationwide, there are 17 accredited optometry schools<sup>50</sup> and 99 ophthalmology residency programs with which health centers can potentially partner to broaden access to professional eye care services.<sup>51</sup> Partnering with these schools to provide broad access to vision care (based on the dental care model) provides a potential opportunity to expand vision care to community health centers, while providing valuable education opportunities for students training to become optometrists and ophthalmologists. However, given that dental care and oral health are now considered crucial to the primary care health center model, efforts should also be made to improve policymaker's understanding about the value of on-site eye care professional services while growing the size of the National Health Service Corps and expanding eligibility to include eye care professionals. At the same time, efforts should also be made to improve general public awareness about vision health.

Although there is relatively little attention that has been paid to assessing their capacity to address disparities in visual health, health centers' location in high-risk communities, ability to prioritize and tailor resources to address highly prevalent health problems, and commitment to regular quality improvement efforts are likely to contribute to reduced disparities in visual health. Indeed, health center studies demonstrate their ability to assess and address unmet acute and chronic health problems in the community, and effectively reduce racial and ethnic disparities for a number of acute and chronic conditions. At the same time, health centers capacity is limited due to general maldistribution and shortage of primary care and specialty providers and limited financial resources.

Given limited resources to address vision health problems, a more detailed evaluation of the type and quality of eye care exams should also be conducted to help health centers identify cost-effective practices, and to evaluate cost on vision health. While there is relatively abundant literature demonstrating health centers ability to serve as medical homes for high-risk populations and to efficiently manage patients with complex health care needs with limited resources, additional research should be conducted to assess the value of having an eye care professional on-site and the impact on reducing or eliminating vision disparities. Without such studies, the need to integrate optometrists and ophthalmologists within the primary care medical home model is likely to remain elusive.

## Appendix: Sample and National Comparison of Select Characteristics

The following table shows select patient, revenue, and size characteristics of the responding health centers and health centers nationwide. As noted earlier, there were 1,040 health centers across the 50 states and the District of Columbia in 2007. Out of 300 health centers sampled, 100 health centers responded to the survey. The information below reflects self-reported health center data from the Uniform Data System, which is maintained by the Health Resources and Services Administration. HRSA did not release specific information, such as revenue and encounters, for 2007 – and 2006 data were used instead for undisclosed categories. Although differences were not found to be statistically significant, generalizability, particularly to location or type of health center, may be limited due to small number of respondents.

### Characteristics of Respondent Health Centers (2007)

Health center profile	Respondent	
	Centers	All Centers
Urban Location	52%	48%
Region		
Northeast	25%	18%
South	27%	36%
Midwest	20%	19%
West	28%	27%
Number of health care delivery sites		
One site	20%	17%
2-4 sites	33%	38%
5-10 sites	31%	29%
More than 10 sites	16%	16%
Number of unduplicated patients served annually		
Less than 5,000 patients	26%	24%
5,000-10,000 patients	20%	24%
More than 10,000 patients	54%	51%
Mean number of patients	15,151	15,019
Number of Encounters (2006 data)		
Less than 20,000 encounters	21%	26%
20,000-60,000 encounters	35%	41%
More than 60,000 encounters	36%	33%
Patient Characteristics		
Poverty Status		
Below 100% FPL	69%	71%
101-200% FPL	22%	21%
Over 200% FPL	8%	8%
Number of unduplicated patients served annually		
Uninsured	41%	40%
Medicaid	36%	35%
Medicare	7%	8%

Other Public	2%	2%
Private	15%	15%
<b>Financial characteristics (2006 data)</b>		
Average Federal Grant	\$2,120,569	\$1,789,251
Average Non-Federal Grants and Contracts	\$1,571,962	\$1,350,730
Other Revenue	\$348,099	\$223,592
Patient Related Revenue	\$4,826,760	\$4,784,719
Total Revenue	\$8,867,390	\$8,148,292
Mean Revenue per Patient	\$585.27	\$542.53

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- <sup>1</sup> Frick, KD, Grower, EW, Kempen, JH, Wolff, JL. "Economic Impact of Visual Impairment and Blindness in the United States." *Archives of Ophthalmology*, 2007;125:544-550.
- <sup>2</sup> Centers for Disease Control and Prevention. "Improving the Nation's Vision Health: A Coordinated Public Health Approach" <http://www.cdc.gov/diabetes/pubs/pdf/vision.pdf>
- <sup>3</sup> Nelson, HD et al. 2004. "Screening for Visual Impairment in Children Younger than Age 5 Years: Update of the Evidence from Randomized Controlled Trials, 1999-2003, for the U.S. Preventive Services Task Force." *AHRQ* Pub No. 04-0541-B
- <sup>4</sup> Vision Council of America, A Summary of Medical Literature on Vision Screenings and Eye Exams, 2004. [http://www.2020advocacy.com/s\\_2020/images/PDFs/StudiesSummary2004.pdf](http://www.2020advocacy.com/s_2020/images/PDFs/StudiesSummary2004.pdf) (Accessed December 18, 2008)
- <sup>5</sup> Broderick P, "Pediatric Vision Screening for the Family Physician" *American Family Physician*. September 1, 1998. 58(3): 691.
- <sup>6</sup> The Vision in Preschoolers Study Group. "Comparison of Preschool Vision Screening Tests as Administered by Licensed Eye Care Professions in the Vision in Preschoolers Study." *American Academy of Ophthalmology* 2004; 111:637-650.
- <sup>7</sup> Evans BJ, Rowlands G. Correctable visual impairment in older people: a major unmet need. *Ophthalmic Physiol Opt* 2004;24:161--80.
- <sup>8</sup> Sudha Cugati; Robert G. Cumming; Wayne Smith; George Burlutsky; Paul Mitchell; Jie Jin Wang Visual Impairment, Age-Related Macular Degeneration, Cataract, and Long-term Mortality: The Blue Mountains Eye Study *Arch Ophthalmol*. 2007;125(7):917-924.
- <sup>9</sup> Correctable Visual Impairment Among Persons With Diabetes--United States, 1999-2004 *JAMA*. 2007;297(1):34-36.
- <sup>10</sup> The Vision in Preschoolers Study Group. "Preschool Vision Screening Tests Administered by Nurse Screeners Compared with lay Screeners in the Vision in Preschoolers Study." *Ophthalmology and Vision Science*, 2005; 46(8), 2639-2648.
- <sup>11</sup> The Vision in Preschoolers Study Group. "Comparison of Preschool Vision Screening Tests as Administered by Licensed Eye Care Professions in the Vision in Preschoolers Study." *American Academy of Ophthalmology* 2004; 111:637-650.
- <sup>12</sup> Zhang X, Saaddine J, Lee P, Grabowski D, Kanjilal S, Duenas M, Venkat Narayan K. Eye care in the United States-Do we deliver to high-risk people who can benefit most from it. *Arch Ophthalmology* 2007;125:411-418.
- <sup>13</sup> Owsley C, McGwin G, Scilley K, Girkin CA, Phillips JM, and Searcey K. Perceived barriers to care and attitudes about vision and eye care: focus groups with older African Americans and eye care providers. *Ophthalmology and visual science*, 2006, 47(7):2797-2802
- <sup>14</sup> Baker R, Bazargan M, Bazargan-Hejazi S, Calderon J. Access to vision care in an urban low-income multiethnic population. *Ophth Epidemiology* 2005;12:1-12.
- <sup>15</sup> National Eye Institute, 2005 Survey of Public Knowledge, Attitudes, and Practices Related to Eye Health and Disease. (October 2007) <http://www.nei.nih.gov/nehep/kap/> (Accessed December 18, 2008)
- <sup>16</sup> Wang F, Ford D, Tielsch JM, Quigley HA, and Whelton PK. "Undetected Eye Disease in a Primary Care Clinic Population" *Ach Intern Med* 1994, 154: 1821-1828
- <sup>17</sup> Bailey, RN, "Visual Impairment and Eye Care Among Older Adults --- Five States, 2005," *MMWR Weekly*, 2006; 55(49);1321-1325.
- <sup>18</sup> National Eye Institute "Identification of Variables That Influence Access to Eye Care: Focus Group Report" August 2005. [http://www.nei.nih.gov/nehep/research/FinalReport9\\_15\\_05.pdf](http://www.nei.nih.gov/nehep/research/FinalReport9_15_05.pdf) (Accessed January 15, 2009)
- <sup>19</sup> Section 330 of the Public Health Service Act [42 U.S.C. 254b], 42 C.F.R. Part 51c, 42 C.F.R. Part 491. Also, see Bureau of Primary Health Care Policy Information Notice: 98-23. Health Center Program Expectations. August 17, 1998.

- 
- <sup>20</sup> The average poverty level in 2007 for households with 3 persons is \$20,650 across 48 states and the District and Columbia, and \$21,470 in Alaska and \$19,750 in Hawaii.
- <sup>21</sup> Zhang X, Saaddine JB, Lee PP, Grabowski DC, Kanjilal S, Duenas MR, and Narayan KMV. Eye care in the United States: Do we deliver to high-risk people who can benefit the most from it? *Arch Ophthalmol* 2007; 125(3):411-18.
- <sup>22</sup> Heslin KC, Casey R, Shaheen MA, Cardenas F and Baker RS. Racial and ethnic differences in unmet need need for vision care among children with special health care needs. *Arch Ophthalmol* 2006;124(6):895-902.
- <sup>23</sup> Gillian K and Fisher S. Addressing Unequal Treatment: Disparities in Health Care. Issue Brief, The Commonwealth Fund; 2004. [http://www.commonwealthfund.org/usr\\_doc/SteelFisher\\_unequaltreatment\\_cong2004\\_709.pdf?section=4039](http://www.commonwealthfund.org/usr_doc/SteelFisher_unequaltreatment_cong2004_709.pdf?section=4039)
- <sup>24</sup> Shin P, Markus A, Rosenbaum S and Sharac J. Adoption of health center performance measures and national benchmarks. *J Ambul Care Manage* 2008;31(1):69-75.
- <sup>25</sup> Huang E, Zhang Q, Brown SE, Drum ML, Meltzer DO and Chin MH. The cost-effectiveness of improving diabetes care in U.S. federally qualified community health centers. *J Gen Intern Med* 2007; 42(6 pt 1):2174-93.
- <sup>26</sup> American Optometric Association of Community Health Center Committee, Proser M, Shin P. The role of community health centers in responding to disparities in visual health. *Optometry* 2008; 79: 564-575.
- <sup>27</sup> National Eye Institute, 2005 Survey of Public Knowledge, Attitudes, and Practices Related to Eye Health and Disease. (October 2007) <http://www.nei.nih.gov/nehep/kap/> (Accessed April 2, 2008)
- <sup>28</sup> CMS, Physician Bonuses. <http://www.cms.hhs.gov/hpsapsaphysicianbonuses> (Accessed December 18,2008)
- <sup>29</sup> American Optometric Association of Community Health Center Committee. Affiliations of community health centers with the accredited schools and colleges of optometry in the states and territories of the United States. *Optometry* 2008; 79: 581-586.
- <sup>30</sup> E.g., Yale School of Medicine. [http://www.eyes.yale.edu/education/residency\\_training.html](http://www.eyes.yale.edu/education/residency_training.html) (Accessed January 17, 2009)
- <sup>31</sup> American Optometric Association of Community Health Center Committee, Proser M, Shin P. The role of community health centers in responding to disparities in visual health. *Optometry* 2008; 79: 564-575.
- <sup>32</sup> Prevent Blindness America, 2007. [http://www.preventblindness.org/advocacy/model\\_screening\\_legislation.html](http://www.preventblindness.org/advocacy/model_screening_legislation.html). (Accessed January 8, 2009)
- <sup>33</sup> National Eye Institute, 2007. *Literature Review: Primary Care Providers*. <http://www.nei.nih.gov/nehep/research/PrimaryCareProviders.pdf> (Accessed January 8, 2009)
- <sup>34</sup> National Eye Institute, 2007. *Literature Review: Eye Health needs of Older Adults* [http://www.nei.nih.gov/nehep/research/The\\_Eye\\_Health\\_needs\\_of\\_Older\\_Adults\\_Literature\\_Review.pdf](http://www.nei.nih.gov/nehep/research/The_Eye_Health_needs_of_Older_Adults_Literature_Review.pdf) (Accessed January 7, 2009)
- <sup>35</sup> Scheimann MM. American Optometric Association optometry practice clinical guideline pediatric eye and vision examines: reference guide for clinicians. 2<sup>nd</sup> ed. ST. Louis, MO: 2002. <http://www.aoa.org/documents/CPG-2.pdf>
- <sup>36</sup> Improving early childhood eye care, policy statements. *Am J Public Health* 2002; 92(3):2-6
- <sup>37</sup> Note the 2008 national health center reporting forms no longer require reporting of services provided. <http://bphc.hrsa.gov/uds/2008manual/default.htm> (Accessed December 19, 2008)
- <sup>38</sup> Zhang X, Saaddine J, Lee P, Grabowski D, Kanjilal S, Duenas M, Venkat Narayan K. Eye care in the United States-Do we deliver to high-risk people who can benefit most from it. *Arch Ophthalmology* 2007;125:411-418.



- 
- <sup>39</sup> Baker R, Bazargan M, Bazargan-Hejazi S, Calderon J. Access to vision care in an urban low-income multiethnic population. *Ophthalmology* 2005;12:1-12.
- <sup>40</sup> Bailey, RN, "Visual Impairment and Eye Care Among Older Adults --- Five States, 2005," MMWR-CDC, December 15, 2006.
- <sup>41</sup> Heslin, K.C., Casey, R., Shaheen, M.A., Cardenas, F., and Baker, R.S. Racial and Ethnic Differences in Unmet Need for Vision Care Among Children with Special Health Care Needs. *Archives of Ophthalmology*. 124(6): 895-902. June 2006.
- <sup>42</sup> Id.
- <sup>43</sup> Shin, P, Finnegan, B, Sharac, J, and Rosenbaum, S, Health Centers: An Overview and Analysis of Their Experience with Private Health Insurance. Kaiser Family Foundation. February 2008.
- <sup>44</sup> CRS Baumrucker EP, "Coverage of Vision Services under the State Children's Health Insurance Program (SCHIP)" Congressional Research Service Report for Congress, RL32628.
- <sup>45</sup> Kaiser Family Foundation, State Health Facts. "Patients' Rights: Direct Access to Providers, 2008" <http://www.statehealthfacts.org/comparetable.jsp?ind=364&cat=7> (Accessed December 18, 2008)
- <sup>46</sup> New Jersey Commission on Business Efficiency of the Public Schools. Individual Supportive Education Reform Agenda for New Jersey Reading. 2006. <http://www.bettervisioninstitute.org/research/Research/NJ%20ed%20link%20report.pdf> (Accessed December 18, 2008)
- <sup>47</sup> Vision Council of America. Making the Grade? An analysis of state and federal children's vision care policy, 2005. [http://www.2020advocacy.com/s\\_2020/pdfs/Making\\_the\\_Grade.pdf](http://www.2020advocacy.com/s_2020/pdfs/Making_the_Grade.pdf).
- <sup>48</sup> Sherry L. Cooper, Associate Director, State Government Relations, American Optometric Association, March 7, 2008
- <sup>49</sup> Abt Associates, "Cost effectiveness of preschool comprehensive eye exams." [http://www.abtassociates.com/reports/ES\\_Cost\\_Effectiveness\\_of\\_Eye\\_Exams.pdf](http://www.abtassociates.com/reports/ES_Cost_Effectiveness_of_Eye_Exams.pdf). (Accessed December 19, 2008)
- <sup>50</sup> Accreditation Council on Optometric Education Accredited Professional Optometric Degree Programs 2 August 2007. <http://www.aoa.org/documents/OD-Program-Directory.doc> (Accessed December 18, 2007)
- <sup>51</sup> International Council on Ophthalmology. <http://www.icoph.org/soc/ifos.cfm> (Accessed February 28, 2008)