



ACCESS TRANSFORMED

BUILDING A PRIMARY CARE WORKFORCE FOR THE 21ST CENTURY

National Association of Community Health Centers

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EXECUTIVE SUMMARY

Community Health Centers: Achieving a Workforce Solution

Pressure to reform the U.S. health care system is mounting in the face of growing numbers of uninsured individuals, widening health care disparities, and the rising cost of care – factors that fuel increasingly restricted access to needed health care for millions of people. **Yet the success of any health reform effort will entail more than achieving universal insurance coverage; it must include a robust and evenly distributed primary care workforce, along with adequate safety net infrastructure and financing for those who are medically underserved.** The national trend so far indicates we are not only falling short of that goal, but retreating from it. Indeed, what we face is a crisis of distribution in terms of the primary care workforce to meet local health needs. In short, there are not enough doctors, nurses, and other primary care professionals in the communities where they are most needed.

The current supply of primary care professionals is already being outpaced by rising demand, and our national health care system is notorious for providing America's most vulnerable and chronically ill limited access to primary health care. In our previous report, *Access Denied*, we presented evidence showing that 56 million Americans lack adequate access to primary health care because of shortages of such physicians in their communities. These “medically disenfranchised” individuals represent one in five Americans, and still millions of others face additional barriers to primary care. **Evidence suggests that a further disappearance of primary care services will inevitably contribute to a worsening of health outcomes, a widening of health disparities, and a rising price tag on the cost of health care.**

Achieving access for the underserved therefore hinges on meaningful health policy advances that can tackle this worsening primary care workforce crisis. **Building on the success of the federal Community Health Centers Program could anchor primary care practices in communities unable to attract or sustain sources of stable and high quality health care.** Moreover, as our *Access Granted* report revealed, health centers already save the health care system billions of dollars annually while pumping economic returns into the very communities that need them most. Recognizing that significant unmet health care needs persist for the millions of individuals without a regular source of care, and with an established and innovative model for primary care delivery, health centers are aiming to reach 30 million patients by the year 2015 under their *ACCESS for All America* plan. This requires producing the workforce needed to staff current and new delivery sites. The plan envisions that health centers will eventually reach all 56 million medically disenfranchised individuals for a total of 69 million patients.

Health centers have achieved record growth since 2000, thanks to a bipartisan initiative spearheaded by President Bush with Congressional support. Between 2000 and 2006, the number of primary care physicians at health centers grew 57%, while the combined number of nurse practitioners, physician assistants, and certified nurse midwives grew by 64%. At the same time, the number of nurses grew 38%. Even so, health centers across the country are experiencing significant clinical vacancies and challenges in recruiting clinical staff. Consequently, the success of any effort to expand health centers in order to increase the availability of care for the medically disenfranchised and underserved will necessarily require more effective policies to address the production and placement of an adequate primary care workforce.

Given the current primary care workforce crisis, we determined the workforce required to achieve these ambitious goals. From our analyses, we project the following:

- Health centers are increasingly challenged to meet their primary care workforce need. Health centers currently need 1,843 primary care providers, inclusive of physicians, nurse practitioners, physician assistants, and certified nurse midwives. On top of this need, they are 1,384 nurses short.
- **To reach 30 million patients by 2015, health centers need at least an additional 15,585 primary care providers**, just over one third of whom are non-physician primary health care providers. Health centers also will need another 11,553 to 14,397 nurses.
- **To reach 69 million patients, health centers will need at least 51,299 more primary care providers over the current number**, as well as an additional 37,981 to 44,522 nurses.
- **Any workforce solution must specifically address the factors driving primary care imbalance in staffing patterns and need that exist across states.** Robust staffing patterns allow for a comprehensive approach to meeting a community's health care needs, including the full range of preventive and chronic care services and those services that facilitate access to care and address socio-economic conditions that lead to poor health.
- Addressing these deficits will involve more than a continuation of current workforce policy. **Policymakers must consider a series of targeted interventions that boost the overall U.S. primary care professional workforce, while also ensuring increased placement in medically underserved areas.** A multi-faceted national and state course of action must strengthen the pipeline of would-be primary care professionals even before they begin formal medical education, expand training opportunities and placement incentives for locating in underserved areas, and ensure adequate reimbursement for primary care services. In particular, successful programs like the National Health Service Corps, which places primary care professionals in underserved areas, can and must be expanded, as should others that train nurse practitioners, physician assistants, certified nurse midwives, and physicians.

Primary care professionals are undeniably needed in underserved communities today. To meet this workforce need, policies must address the location and career choices among practicing and future professionals that cause an oversupply in some areas and an acute shortage in others. This report lays out the workforce needed to reach these goals, as well as a multi-faceted policy approach that will strengthen the nation's primary care system and minimize health disparities, making it possible to ensure that every American can have access to vital primary health care.

INTRODUCTION

The U.S. health care system is in a tailspin and in need of systemic reform. Rising numbers of people are uninsured or even underinsured, forced to delay care at the risk of imperiling their health.¹ Health care disparities – the hallmark of communities shut out of preventive medicine – continue to widen between the haves and have-nots.² And, tragically, the U.S. is rated dead last among 19 other industrialized nations when it comes to premature deaths that could have been prevented by timely access to care.³ Access remains the most pressing challenge to our health care system, where the landscape continues to fragment with costly and diminishing health care choices for consumers. Indeed, if every person in America woke up tomorrow with an insurance card in their hand, they still would not be guaranteed access to primary care.⁴ Primary care and preventive medicine offer powerful weapons to combat chronic conditions and premature mortality, but geographical imbalances in the health care professional workforce hampers its capacity to address worsening health care disparities.

Access remains the most pressing challenge to our health care system, where the landscape continues to fragment with costly and diminishing health care choices for consumers.

In a recent report, *Access Denied*, the Robert Graham Center and the National Association of Community Health Centers (NACHC) presented evidence showing that 56 million Americans – nearly one in five – lack adequate access to primary health care because of shortages of such physicians in their communities. These “medically disenfranchised” individuals live in every state, and many are insured.⁵ Yet they comprise only one portion of a broader group of medically underserved individuals facing multiple and compounding barriers to care – be they financial, linguistic, cultural, or geographic. Medical underservice can and does occur because of health care professionals’ practice choices that create real barriers to care even in areas where a basic provider-to-population count alone would seem reasonable to serve a community’s needs. For instance, physicians are caring for fewer Medicaid and charity care patients than in years past.⁶ An imbalance of health care professionals actually serving minority, low income, uninsured, and publicly insured populations means that these same populations are more likely than white, higher income, and privately insured individuals to suffer poorer health outcomes and experience unavailability of or uncoordinated care.⁷

Solving access problems is not possible without two elements: 1) a **sufficient supply of primary care health professionals**, including physicians, nurse practitioners, physician assistants, nurses, dental and behavioral health (i.e., mental health and substance abuse) professionals, plus other clinical staff, and 2) policy and incentives that permit **distribution of the primary care workforce to serve populations and areas of greatest need**. This point was most recently underscored in a report by the Association of Academic Health Centers, which warned that the country is rapidly running “*out of time to address what is out of order in our health workforce.*”⁸ A case in point is Massachusetts, where implementation of the state’s landmark universal insurance coverage initiative has created a primary health care bottleneck. There are not enough primary care professionals serving in the right places to meet the needs of the Bay State’s newly insured population.⁹ Expanding coverage without taking simultaneous steps to address primary health care shortages can have unintended and costly consequences. But, as the national consensus for universal coverage gathers momentum, the lessons of Massachusetts are important now more than ever.

Why is there a shortage? Fewer medical students are choosing primary care careers while the number of training programs for primary care is falling. To continue on this path means the existing shortage in underserved areas can only worsen, contributing to a deterioration of health outcomes, a widening of health disparities, and a rising price tag on the cost of health care. Indeed many studies conclude that the only way to make people healthier, keep them out of hospitals, and achieve lower health care costs is through primary health care.¹⁰ Greater access to primary and preventive health care is our best chance to create a healthier nation.

One critical component of the health care system, the national network of Community Health Centers, provides primary care access to the poor and uninsured in the nation's most underserved and isolated areas. Health centers are by design located in areas where care is needed but scarce, or where health care is plentiful but only for the privately insured. They improve access to care for millions of people regardless of their insurance status or ability to pay. Their more comprehensive approach to health care is geared to mitigate the effects of poverty, remove access barriers that confront vulnerable populations, and keep patients whole in a fractured system while also reducing and eliminating health disparities, an achievement that generates billions in savings for the entire health care system and economic returns for the low income communities they serve. In fact, the Health Centers Program was the highest rated Department of Health and Human Services competitive grant program in fiscal year 2006.¹¹

Building on the success of Community Health Centers could anchor primary care health access in communities unable to attract or sustain sources of stable and high quality health care. In recognition of the unmet health care needs that people experience when they lack regular access to care, health centers have set out to reach 30 million patients by the year 2015 under their **ACCESS for All America** plan. The plan envisions that health centers eventually reach all 56 million medically disenfranchised people in America, on top of patients currently served.

This report seeks to address the workforce that will be required for the **ACCESS for All America** plan to succeed nationally and across each state. It examines both the current state of the primary care workforce and future demand for health center services. Future reports will uncover the dental and behavioral health workforce needs to support health center growth. We also identify several policy options that would help “right size” the health care workforce in order to optimize value.

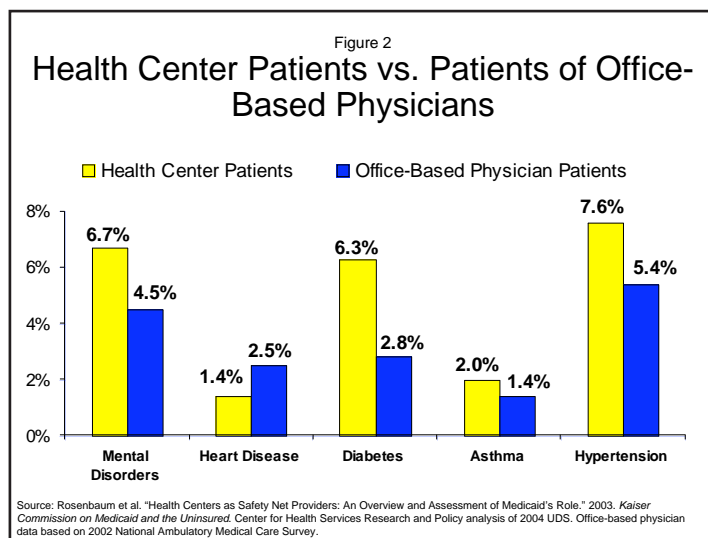
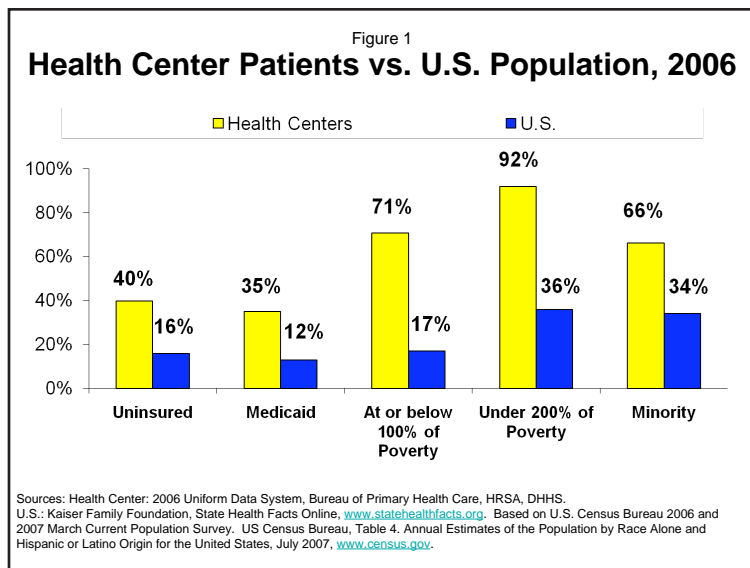
MEETING UNMET NEED THROUGH THE COMMUNITY HEALTH CENTERS PROGRAM

Since the 1960s, Community, Migrant, Homeless, and Public Housing Health Centers have provided at-risk populations with a medical home, or perhaps a “health care home” given these health centers’ broad and far-reaching approach. Health centers break down barriers to quality primary and preventive care, tailor their care to meet the needs of each unique community and patient served, and address health disparities wrought by poverty, lack of education, and unhealthy physical environments. The location, services, and governance of health centers are grounded in mission and mandated by federal law.¹² Also known as Federally-Qualified Health Centers (FQHCs), health centers are required to:

- be located in medically underserved areas or serve a high need community with few or no primary care resources,
- coordinate and integrate primary care with social services, dental and behavioral health, and pharmacy services, as well as other supportive services that promote access to health care such as transportation, case management, home visits, and health/nutrition education,
- be available to all residents within their service area regardless of ability to pay,
- conduct continuous quality improvement activities and needs assessments, and
- be governed by a community board, the majority of whose members must be health center patients.

Together, these requirements make health centers unique among primary health care providers and are central to their success.

Serving Vulnerable Populations. Today over 1,150 health center organizations serve 18 million people in over 6,600 delivery sites located in every state and territory. Health center sites are almost evenly split between rural and urban areas. Between 2000 and 2007 alone, the number of health center patients grew by 67% as a result of an aggressive program expansion to meet rising need. Compared to the U.S. population, health center patients are significantly more likely to be low income, uninsured or publicly insured, and members of racial and ethnic minority populations (see Figure 1). Currently, health centers serve 1 in



5 of the nation's low income, uninsured persons, and 1 in 4 low income, minority residents. Health center patients are three times more likely than the general U.S. population to have limited English proficiency.¹³ Additionally, health centers serve over 920,000 migrant and seasonal farmworkers and almost 1 million homeless individuals.

Many health center patients have complex health care needs. Health centers serve 4.7 million patients with diabetes, cardiovascular disease, asthma, depression, cancer, and HIV – one quarter of all current patients. The number of patients with chronic conditions is rising at a faster rate than that of the number of total patients. As Figure 2 shows, the proportion of health center patients with certain chronic conditions exceeds the proportion of patients with such needs who receive their care through private physician practices.

Expanding Health Center Successes. Research consistently demonstrates the value and impact of health centers, as outlined below.

- **Better Access to Care.** Health center patients are much more likely to have a usual source of care than other low income, minority or uninsured people in America, regardless of race/ethnicity, education, and income level. They are also more likely to have access to timely screening and preventive services.¹⁴
- **High Quality of Care.** Health centers provide comparable or better care than more expensive provider types.¹⁵ Their chronic disease management programs improve processes of care and outcomes for patients.¹⁶
- **Reducing Health Disparities.** Health centers reduce disparities in health status, even after controlling for socio-demographic factors.¹⁷ One study found that as the proportion of a state's low income population served by health centers grows, state-wide health disparities narrow along key health indicators.¹⁸
- **Improve Birth Outcomes.** Women of low socioeconomic status seeking prenatal care at health centers experience lower rates of low birth weight compared to all such mothers. This trend holds for each racial/ethnic group.¹⁹
- **Generate Savings and Economic Benefits.** Health centers lower the cost of care for chronic conditions and minimize the onset of complications through early screening, detection, and treatment.²⁰ Additionally, research demonstrates that health centers are associated with reducing inpatient, emergency department, and specialty care use, leading to substantial savings for the entire health care system.²¹ Our own *Access Granted* report finds that patients who receive the majority of their care at health centers have 41% lower total health care expenditures (\$1,810 per person annually) than patients who rely on other provider types, **saving between \$9.9 and \$17.6 billion a year.** On top of this, health centers pump dollars and jobs into the low income communities. Their **overall economic impact reaches \$12.6 billion annually**, while also producing 143,000 jobs in some of the country's most economically deprived neighborhoods.²²

The ACCESS for All America plan would create medical or “health care homes” for millions currently without. Once health centers reach 30 million patients, they could save the health care system between \$22.6 and \$40.4 billion annually, as well as bring in up to \$40.7 billion in economic returns for their communities.

Too Few Primary Health Care Professionals. In the context of overall health reform, **an expansion of health centers is an efficient and proven method of reducing unmet medical needs and reducing health disparities.**²³ America's health centers have developed a strategy to further reduce America's medically disenfranchised. The **ACCESS for All America** plan would create medical or “health care homes” for millions currently without. Once health centers reach 30 million patients, they could save the health care system between \$22.6 and \$40.4 billion annually, as well as bring in up to \$40.7

billion in economic returns for their communities.²⁴ Their ability to create jobs and boost local economies is especially critical given that investment in a community's economic well-being can improve community and population health, particularly among previously neglected communities.²⁵

The Health Centers Program has experienced substantial growth since 2000, the result of a bipartisan initiative spearheaded by President Bush with Congressional support. Between 2000 and 2006, the number of primary care physicians at health centers grew 57%, while the combined number of nurse practitioners (NPs), physician assistants (PAs), and certified nurse midwives (CNMs) grew 64%. The number of nurses grew 38% over the same time. Even so, health centers across the country are experiencing significant clinical vacancies and challenges in recruiting clinical staff.²⁶ Consequently, the success of any effort to expand health centers in order to increase the availability of care for the medically disenfranchised and underserved will necessarily hinge on the successful production and placement of an adequate primary care workforce.

The robust complement of skilled health care professionals at health centers is an important part of what makes them especially effective. By delivering care in a team-based setting, health centers effectively address their patients' medical, social, behavioral, and environmental health care needs. Clinical teams draw upon all primary health care professionals, along with case managers, behavioral health specialists, dental providers, and enabling services staff, utilizing multiple health professionals with varied skills. The Institute of Medicine and several physician organizations identify an adequate and varied staffing model as being central to improving health outcomes and decreasing health disparities in underserved populations.²⁷ As health centers strive to reach millions of individuals currently shut out of primary care, the challenge remains maintaining and growing this robust mix of health professionals. Precisely because health centers are located in communities that have historically suffered from inadequate numbers of primary care professionals relative to need, they face formidable obstacles to recruiting and retaining clinical staff even without the pressures of carrying out an expansion.

STUDY PURPOSE AND APPROACH

This study sets out to estimate current staffing patterns and health centers' clinical staffing needs at the national and state level in order to enable health centers to reach the goals of the **ACCESS for All America** plan. This means reaching 30 million patients total in 2015, and ultimately 69 million patients, including the 13 million medical patients currently served plus all 56 million medically disenfranchised.²⁸ It is important to note that analyses are based on 2006 data and do not account for the approximately 1 million patients of non-federally funded health centers given a lack of available data. Health center patient volume expanded from approximately 16 million total patients served in 2006 to 18 million by 2008 nationally, and our 13 million patient baseline only includes patients with a medical visit, as opposed to those with only dental or behavioral health visit. Future patient targets envision all patients relying on health centers for full medical care. See **Appendix A** for more detail on the approach and methods used for this analysis.

Because health centers operate through a team-based delivery model, our analysis of health center primary care clinical workforce need looks at ratios of providers (that is, physicians, NPs, PAs, and CNMs) to patients as a way to establish a benchmark of productivity, or stated another way, as a measure of how many patients

one full time equivalent (FTE) clinical staff person cares for in a year. Higher ratios indicate a higher work burden and vice versa. We use two benchmarks as points of reference:

1. **Current Health Center Staffing Patterns.** Using data from the 2006 Uniform Data Set (UDS), to which all federally-funded health centers report annually, we determined median health center panel size for primary care providers. This accounts for only those patients who have primary care medical visits.
2. **National Comparison Staffing Patterns.** We apply staffing patterns that correspond to other health care systems, such as staff model HMOs and the Veterans Health Administration (VA).

Our purpose in applying these two benchmarks was to gain a sense of the workforce need based on current health center staffing, assuming no change, as well as more optimal staffing. We used the two benchmarks to project current and future needs assuming that any variations are the product of health center environments and would be maintained (such as variable underlying state laws regulating the scope of permissible practice for various health care professionals, payer mix, uninsured population, etc.). Additionally, this analysis assumes that health centers' current patient mix will remain the same. We believe that this is a conservative assumption given the presence of rising numbers of patients with chronic conditions and the loss of alternative community sources of care for low income uninsured and publicly insured residents.

To determine the second benchmark of staffing patterns corresponding to other health care systems, we conducted an extensive literature review of national and international primary care staffing patterns. Physician-to-patient ratio is a common metric of adequacy used in other health care settings despite the fact that many employ NPs, PAs, and CNMs. Our analysis's second benchmark applies a physician-to-patient ratio of 1:1500, comparable to what we observed in our review of other health care systems (see **Appendix B**). By adjusting the national comparison physician-to-patient ratio to account for other primary care providers in team-based settings, we find that applying the 1:1500 physician-to-patient ratio to the current health center staffing mix results in a provider-to-patient ratio of 1:958. We also find this is lower than health centers' current median provider-to-patient ratio. The difference in patient-to-provider ratios permits calculation of the shortfall of providers in health centers compared to these other health care settings.

As we will show below, there is considerable variation across states in health center staffing patterns. We report state level estimates using the national benchmark except for the few states where the average state ratio is lower than the national benchmark. For these states, future workforce needs are calculated using their current staffing ratio. Our state projections of future patient counts are based on state-level estimates of the number of medically disenfranchised persons from our earlier Access Denied report. Our state level analysis does not equal our national estimates when aggregated across states, due to the use of estimates based on current staffing patterns for states with a provider-to-patient ratio below the national comparison figure (1:958).

FINDINGS

Current Health Center Primary Care Workforce. In 2006, health center staffing included 11,877 medical providers nationally, composed of primary care physicians (64%), as well as nurse practitioners, physician assistants, and certified nurse midwives (36%). In addition, 8,776 nurses worked in health centers, creating a 0.74 ratio of nurses to primary care providers (physicians, NPs, PAs, and CNMs) (see table below). This median patient-to-provider panel size of 1092:1 can also be expressed as a 1709:1 patient-to-physician ratio for comparison to other settings. National and international benchmarks offer a more typical patient-to-physician benchmark of 1500:1 (see Appendix B). In Table 1 below we show the relative patient-to-staff patterns for these two benchmarks.

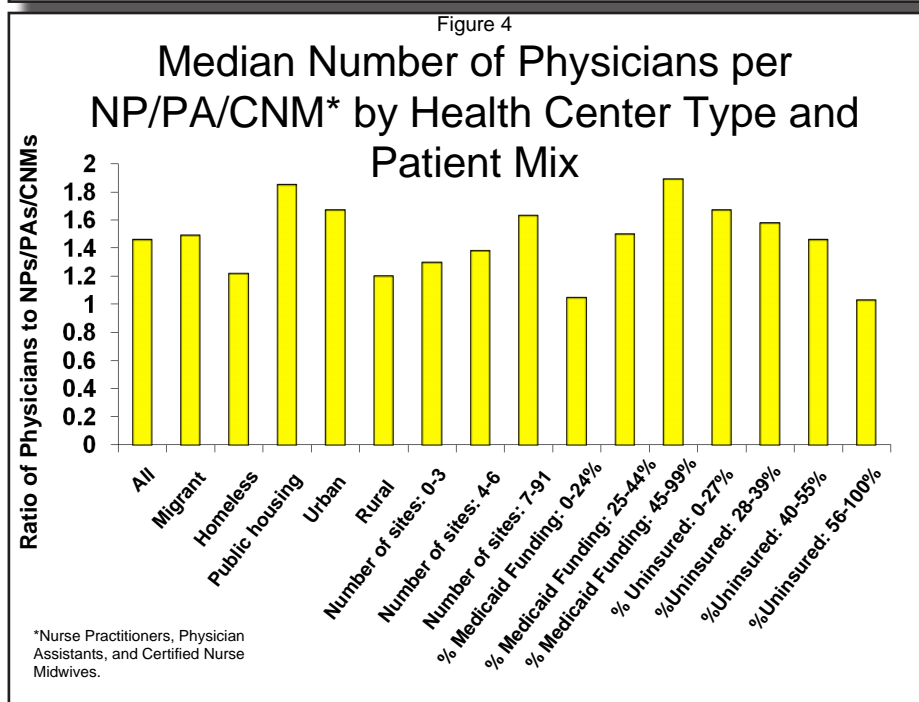
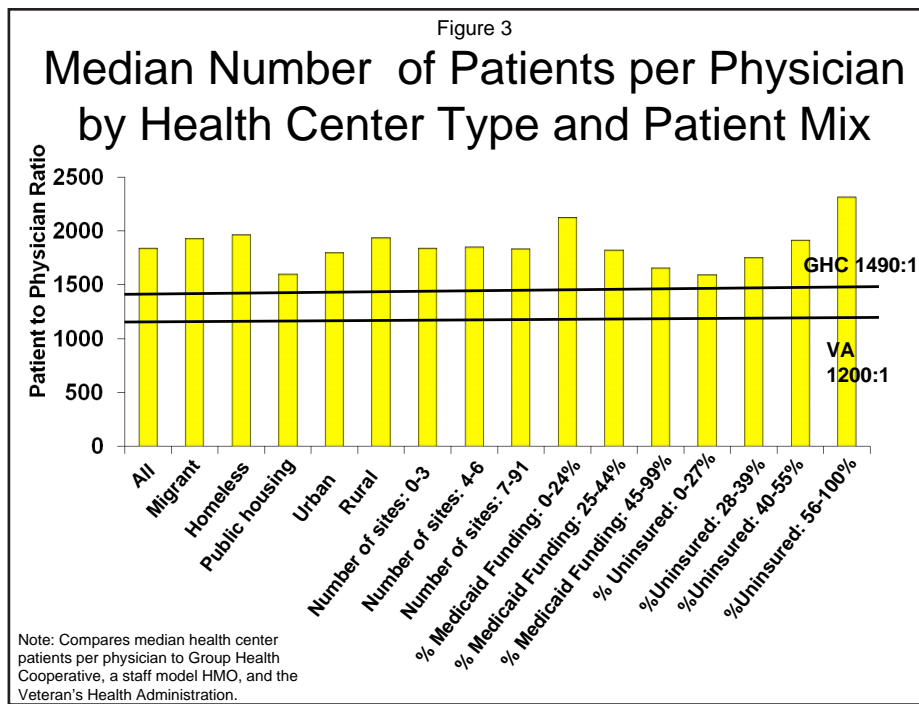
Table 1. Current Staffing Patterns and Benchmark Rates for Workforce Projections

	Current Rates		Benchmark Rates	
			Health Center Median	National Comparison
	Staff	Staffing Ratio	Patients/ Staff	Patients/ Staff
Health Providers*	11,887	1.00	1,092.00	958.4
Physicians	7,595	0.64	1,709.00	1,500.00
NPs/PAs/CNMs	4,292	0.36	3,024.50	4,154.60
Nurses	8,776	0.74	1,479.10	1,298.20

Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.
 *Health providers include nurse practitioners, physician assistants, certified nurse midwives, and physicians.

There is considerable variation in staffing and patient-to-provider panel size across different types of health centers (Figures 3 and 4). For instance, centers with a higher proportion of patients covered by Medicaid and lower proportions of uninsured patients have more physicians, relative to NPs, CNMs and PAs, and smaller patient panels for each physician. Also urban centers are more likely to have relatively more physicians than rural centers. Figure 3 shows that some health centers, depending on federal funding category and patient mix, have patient-to-physician ratios greater than the same ratio in Group Health HMOs (1409:1) and well above those found in the VA clinics (1200:1).

Projected Need. We base future need on 30 million and then 69 million patient targets. As explained earlier, the **ACCESS for All America** plan aims to expand health centers to serve 30 million patients by 2015. This includes patients already being served (roughly 13 million medical patients among federally-funded health centers in 2006). The plan also aims to reach all 56 million medically disenfranchised, putting the patient goal at 69 million. Health centers envision providing comprehensive primary care to all 30 million and then 69 million patients. Based on both the current practice standard and the more ideal standard, we calculate the following workforce needs at health centers:

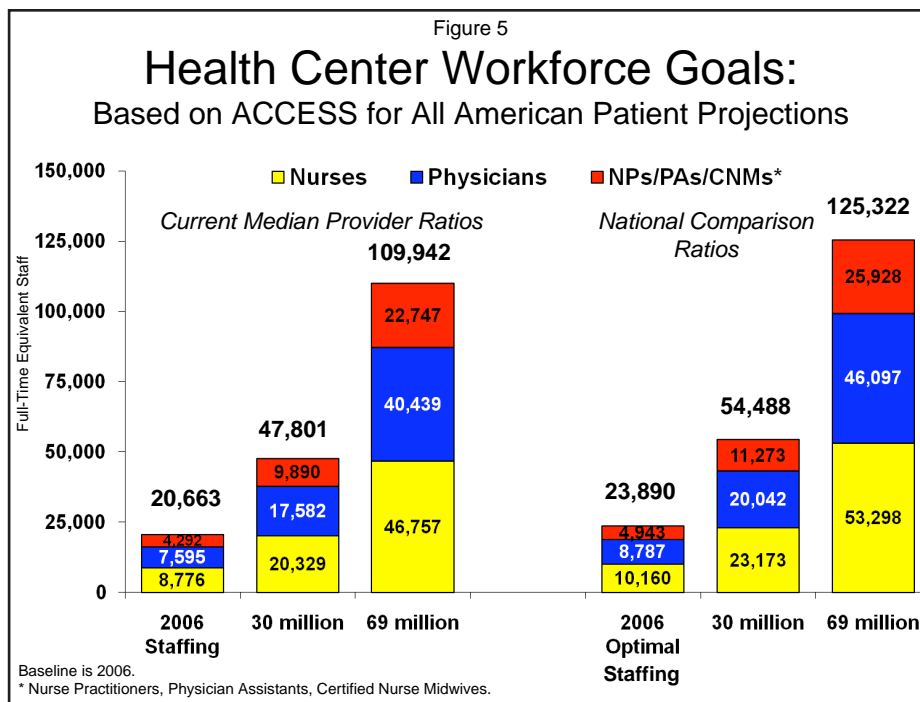


- Health centers are falling short of their primary care professional needs. By comparing the standard national provider-to-patient ratio with that of health centers' national median, we find that health centers are **currently 1,843 primary care providers short, inclusive of physicians, NPs, PAs, and CNMs. On top of this, they are 1,384 nurses short.**
- **To reach 30 million patients, health centers need an additional 15,585 to 19,428 primary care providers.** Just over one third of the needed workforce is non-physician primary health care providers. **Health centers also will need another 11,553 to 14,397 nurses.**
- **To reach 69 million patients, health centers will need between 51,299 and 60,138 more primary care providers over the current number, as well as an additional 37,981 to 44,522 nurses.**

Table 2. Health Center Workforce Needed for Patient Care Capacity Expansion

Staffing	2006 Staffing	Median Provider Ratio		National Comparison*	
		30 Million	69 Million	30 Million	69 Million
Physicians	7,595	17,582	40,439	20,042	46,097
NP/PAs/CNMs**	4,292	9,890	22,747	11,273	25,928
Total Providers	11,887	27,472	63,186	31,315	75,025
Net Increase Providers		15,585	51,299	19,428	60,138
Nurses	8,776	20,329	45,757	23,173	53,298
Net Increase Nurses		11,553	37,981	14,397	44,522
Total Primary Care Professionals	20,663	47,801	109,942	54,489	125,322

*Based on a 1:1500 *physician*-to-patient ratio. ** Nurse Practitioner, Physician Assistants, Certified Nurse Midwife



State Level Findings. There is substantial variation in staffing patterns across states. For example, Alaska has nearly two NPs or PAs to every physician, while Ohio has nearly the opposite (see Table 3). Health center staffing data suggest that this may be due to a combination of factors including state scope of practice laws and desirability of location for attracting physicians. There is also considerable variation across states in health center patient panel size (Table 3). This disparity is also worthy of consideration, and may indicate that some states need more support to expand safety net capacity or to otherwise reduce patient panel size. Specifically, states such as Nevada, Alabama and Oklahoma may require a different mix of or additions to their workforce and infrastructure, as compared to other states. Table 3 below provides estimates regarding the number of primary health care providers (physicians, NPs, PAs, and CNMs) needed to expand health centers to reach 30 million and then 69 million patients. To reach 30 million patients nationally, health centers in 23 states will need more than 500 FTE providers. Health centers in seven states will need more than 1,000, with California needing the most at 3,334 FTEs.

Table 3. Health Center Current Staffing Ratios and Future Workforce Need by State and U.S. Territories

State	Patients-to-Physician Ratio, 2006	Patients-to-Provider* Ratio, 2006	Physicians-to-NPs/PAs/CNMs* Ratio, 2006	30 Million Health Center Patient Target**	69 Million Health Center Patient Target***	Workforce Needed†	
						30 Million patients	69 Million patients
Alabama	2,159.60	1,449.60	2.04	951,730	2,799,507	993	2,285
Alaska	2,132.80	618.6	0.41	157,739	363,675	255	587
Arizona	1,638.10	1,190.20	2.66	654,933	1,567,289	684	1,572
Arkansas	1,705.60	1,167.70	2.17	253,375	619,127	264	608
California	1,875.90	1,186.30	1.72	3,194,431	5,884,068	3,334	7,669
Colorado	1,780.60	961.2	1.17	631,879	1,276,373	660	1,517
Connecticut	1,683.10	926.2	1.22	329,190	609,754	355	817
Delaware	1,460.80	892.7	1.57	100,217	305,348	112	258
Dist. of Columbia	1,057.60	742.4	2.36	107,088	156,865	144	332
Florida	1,846.60	1,265.90	2.18	2,821,226	8,755,761	2,945	6,773
Georgia	1,867.00	1,230.40	1.93	595,510	1,570,748	622	1,430
Hawaii	1,176.50	780.7	1.97	105,188	108,327	135	310
Idaho	2,226.90	1,022.50	0.85	237,446	642,025	248	570
Illinois	1,640.50	1,200.50	2.73	1,288,606	2,471,890	1,345	3,094
Indiana	1,645.60	944.1	1.35	321,606	717,666	341	784
Iowa	2,215.50	1,101.00	0.99	241,960	619,216	253	581
Kansas	3,274.10	1,249.80	0.62	419,593	1,421,405	438	1,007
Kentucky	1,880.00	1,222.40	1.86	388,925	861,462	406	934
Louisiana	1,728.90	1,127.20	1.87	512,208	1,578,001	535	1,230
Maine	1,860.80	979.6	1.11	164,778	197,788	172	396
Maryland	1,445.20	1,031.20	2.49	293,683	559,000	307	705
Massachusetts	1,311.10	858.2	1.9	776,705	1,649,711	905	2,082
Michigan	1,895.80	1,120.40	1.45	871,675	1,993,231	910	2,093
Minnesota	1,860.30	1,042.00	1.27	298,385	689,009	311	716
Mississippi	2,235.90	1,305.50	1.4	648,493	1,591,073	677	1,557
Missouri	1,864.80	1,101.50	1.44	977,715	2,814,360	1,021	2,347
Montana	2,472.50	1,225.80	0.98	102,585	173,382	107	246
Nebraska	2,350.60	1,209.80	1.06	73,987	162,875	77	178
Nevada	2,571.50	1,505.30	1.41	227,669	669,951	238	547
New Hampshire	1,488.50	798.4	1.16	102,105	212,721	128	294
New Jersey	1,436.60	1,036.60	2.59	322,592	418,417	337	774
New Mexico	1,822.70	1,081.00	1.46	327,048	573,290	341	785
New York	1,450.20	986	2.12	1,757,250	3,397,690	1,834	4,219
North Carolina	2,006.10	1,252.20	1.66	817,268	2,140,311	853	1,962
North Dakota	3,021.50	1,042.10	0.53	47,441	117,007	50	114
Ohio	1,671.70	1,270.80	3.17	622,526	1,441,294	650	1,495

State	Patients-to-Physician Ratio, 2006	Patients-to-Provider * Ratio, 2006	Physicians -to- NPs/PAs/ CNMs* Ratio, 2006	30 Million Health Center Patient Target**	69 Million Health Center Patient Target***	Workforce Needed [†]	
						30 Million patients	69 Million patients
Oklahoma	2,191.40	1,353.00	1.61	182,840	409,232	191	439
Oregon	1,686.70	817.7	0.94	606,051	1,695,256	741	1,705
Pennsylvania	1,856.30	1,253.80	2.08	707,057	1,230,484	738	1,698
Rhode Island	1,510.70	1,005.20	1.99	176,204	362,506	184	423
South Carolina	1,726.30	1,183.80	2.18	787,858	2,178,165	822	1,892
South Dakota	2,987.30	1,064.60	0.55	80,556	155,882	84	193
Tennessee	2,354.40	1,222.20	1.08	591,097	1,470,544	617	1,419
Texas	2,066.70	1,246.20	1.52	1,909,337	5,257,632	1,993	4,584
Utah	2,355.20	1,173.50	0.99	404,398	1,293,952	422	971
Vermont	1,867.30	991.3	1.13	67,948	84,184	71	163
Virginia	1,688.40	1,065.70	1.71	408,629	968,826	427	981
Washington	1,611.40	1,001.80	1.64	1,164,670	2,674,298	1,216	2,796
West Virginia‡	1,841.70	1,036.90	1.29	585,888	1,386,602	612	1,407
Wisconsin	1,005.50	715.9	2.47	362,588	897,728	506	1,165
Wyoming	2,344.80	1,091.50	0.87	48,697	125,507	51	117
Puerto Rico‡	1,266.10	1,266.10	Data Unavailable	707,762	1,675,037	739	1,699
Other U.S. Territories‡	1,787.90	1,330.60	2.91	137,314	324,976	143	330

Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS. NACHC and the Robert Graham Center. *Access Denied: A Look at America's Medically Disenfranchised*. March 2007. www.nachc.com/research-reports.cfm. Analysis by the Robert Graham Center and NACHC.

Note: Our state level analysis does not equal our national estimates when aggregated across states, due to the use of estimates based on current staffing patterns for states with a patient-to-provider ratio below the national comparison figures (958:1). Additionally, once we include U.S. territories and the one state for which medical disenfranchisement data was not available for (West Virginia) (see *Access Denied*), our national patient targets actually rise by less than 1 million people.

* Providers include all full-time equivalent physicians, nurse practitioners, physician assistants, and certified nurse midwives.

** Assumes every state will grow to serve 26% of their state's 2005 medically disenfranchised population, plus current medical patients. For more information on medically disenfranchised in every state, see *Access Denied*.

*** Assumes every state will grow to serve 100% of their state's 2005 medically disenfranchised population, plus current medical patients.

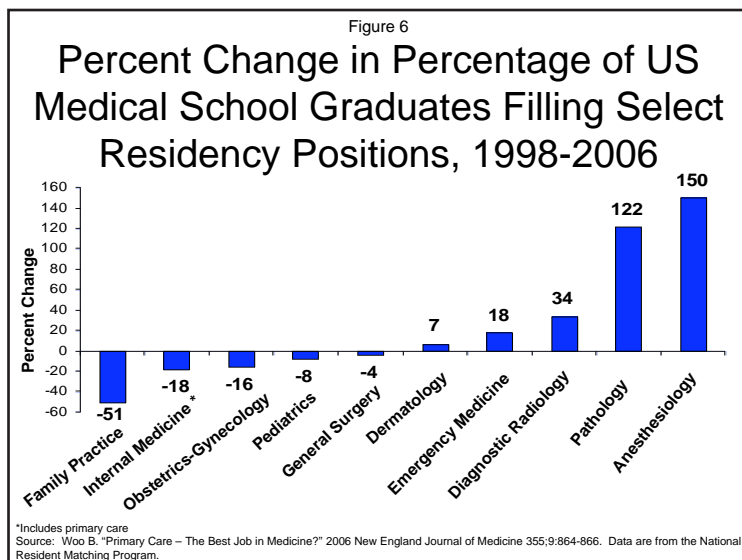
[†] Due to considerable variation across states in staffing patterns, we report state level estimates using the national benchmark (1:1500 or adjusted to 1:958 after taking other providers into account) except for the few states where the average state ratio is better than the national benchmark (Alaska, Connecticut, Delaware, Hawaii, Indiana, Massachusetts, New Hampshire, Oregon, and Wisconsin, and the District of Columbia). For these states and the District of Columbia, future workforce needs are calculated using their current staffing ratio. Our state projections are based on state-level estimates of the number of medically disenfranchised persons from our earlier *Access Denied* report (see **Appendix A** for a full explanation of this calculation).

‡ Because data were not available for West Virginia or the U.S. territories (see *Access Denied*), we assume the twice the number of patients currently served.

CHALLENGES TO ADEQUATE STAFFING

Health centers are aware that the **ACCESS for All America** plan cannot be achieved without fundamental change. In particular, workforce supply would benefit by changing the focus of health professions training, and fostering opportunities for people to relocate and work in underserved areas. Even changes in the current payment system to support primary care nationally are required to lay the groundwork for closing the primary care gap. Each of these policies powerfully influence career choices that will be made by each generation of health care students and trainees. Despite the fact that the number of U.S. health care professionals in the primary care field overall is rising,²⁹ too few practice in areas where need is greatest. Most health professionals are concentrated in areas where there is already a high level of primary

The deficit of health professionals in medically underserved areas will most likely worsen, given the dwindling interest in primary care among medical students. Beyond availability of residency programs is the drastic decline in U.S. medical school graduates choosing primary care fields as compared to the rapid increase in those choosing specialty fields.



care resources.³⁰ Beyond physical location, fewer private physician practices are accepting uninsured and publicly-insured patients, creating a deficit of access even in places appearing to have adequate numbers of providers.³¹

The deficit of health professionals in medically underserved areas will most likely worsen, given the dwindling interest in primary care among medical students. Beyond availability of residency programs is the drastic decline in U.S. medical school graduates choosing primary care fields as compared to the rapid increase in those choosing specialty fields.

Most notable is the 51% decline in family practice (Figure

6). Training capacity through primary care residency programs has also slipped.³² Between 2000 and 2008, family medicine experienced a net loss of 44 residency programs and 780 fewer filled positions, a drop of 9% and 7%, respectively.³³ This decline is critical because family physician residencies represent the largest platform of primary care training and the majority of physicians serving in health centers. Internal medicine also realized reductions in programs and positions, but its primary care tracks saw the greatest reductions, falling by 44% over the same period.³⁴

The declining proportion of health professionals who choose a primary care career will have serious and harmful effects on all communities and every individual, but will be most acutely felt in communities that are underserved today. Policy and practice must change or be strengthened if these underserved communities are to have an adequate level of primary care professionals. Demand for primary care services will only rise as the population ages and develops more complex health care needs, such as chronic conditions.³⁵ In fact, the number of working-age adults who reported having at least one of seven major chronic conditions grew

25% since 1997, to a total of nearly 58 million by 2006, and that individuals in this group – especially those who had private insurance or were completely uninsured – experienced substantial erosions in access to health care over that period.³⁶ Moreover, the federal government anticipates that the demand for primary care professionals will increase 38% from 2000 to 2020.³⁷ Marginalized communities – the very ones targeted by the federal Health Centers Program – will be hardest hit should these trends continue. Policy makers at the federal and state levels should heed the eroding interest in primary care and maldistribution of both current and future professionals as indicators of increasing instability in the nation's primary care system.

The access problems in Massachusetts occurred even with the highest primary care physician-to-population ratio in the nation.

Lower salaries, school debt, heavier workload, and demands on their time are major factors in medical students' decisions to enter primary care. Median annual income for primary care physicians is significantly lower than specialist physicians, and the gap is widening.³⁸ The income disparity derives in part from the way providers are currently reimbursed for services, in a payment system which favors the more costly, procedure-oriented specialty care over general primary care services.³⁹ The predominately fee-for-service system characteristic of most payers, including Medicare, Medicaid, and commercial insurance, carries built-in incentives for a multitude of medical procedures. This benefits specialists, who tend to perform more procedures, over primary care physicians, who provide mostly office visits. Additionally, providers are not compensated for the cost of activities and services that typically fall under the domain of primary care, such as coordinating services, ensuring continuity of care, offering multiple means of communication with patients outside appointments, and providing translation and interpretation services. These services are the very part of primary care that is both time consuming and least likely to be reimbursed, yet related to improved health outcomes.⁴⁰

These problems are not limited to physicians alone. NPs and PAs play a vital role in the delivery of primary care. As of 2004, it was estimated that 80% of NPs worked in a primary care discipline while only 44% of PAs did.⁴¹ State scope of practice laws, which regulate the range of permissible practice for various health care professionals, encourage NPs to locate in states allowing them to provide a broader range of services, which may lead to variation in NP supply across states.⁴² Although the numbers of PAs and NPs rose faster than physicians between 1995 and 2004, the numbers of NP graduates is projected to decline in future years.⁴³

Let us not forget the cautionary tale of the Commonwealth of Massachusetts. As noted earlier, the state's health coverage expansion created new demand for primary care services, particularly among the previously uninsured. Although the rate of uninsured adults dropped from 13% to 7% after the health reform plan went into effect, more adults complained that they could not find a primary care physician and went without care (7% compared to 4% the previous year). Even the anticipated relief from crowded hospital emergency rooms never arrived as the rate of people seeking nonemergency care remained unchanged.⁴⁴ These access problems occurred even with the highest primary care physician-to-population ratio in the nation.⁴⁵

THE WAY AHEAD

Balance remains the single greatest challenge of the health center workforce problem. Indeed, the U.S. health professional workforce has grown faster than the population, yet there are simply not enough health professionals in the places where they are most needed.⁴⁶ This maldistribution of health professionals is driven by location and career choices among practicing and future professionals. To achieve balance, we must start with the pipeline of professionals who are coming into the health care workforce. We need better training, more incentives to lure professionals to medically underserved areas, and adequate reimbursement of primary care. There is no single solution but, rather a series of policy interventions that will boost primary care supply for underserved communities.

The U.S. health professional workforce has grown faster than the population, yet there are simply not enough health professionals in the places where they are most needed.

Additionally, we must address the variations in health center staffing patterns and size of patient panels that are likely rooted in state- and national-level policies that, however well-intentioned, carry unintended consequences. State scope-of-practice laws, Medicaid payment policies, difficulty in attracting different types of health professionals, state-based incentives for underserved care, federal placement programs not pursued by some states, or strength of primary care organizations suggest a need to better understand how policies impact primary care shortages. Federal and state collaborations should lead efforts to understand which policies foster better health center staffing and ensure that safety net workforce policy is at the forefront of health reform efforts.

Fostering the Pipeline for Primary Care. Primary care cannot survive unless students are recruited early in their training, or even before training begins. The most effective way to create a pipeline of health care professionals to locate in underserved communities may be to actually draw from these very communities.⁴⁷ There is also compelling evidence that selecting students from rural backgrounds into medical school increases the likelihood that they will choose primary care specialties and return to rural areas.⁴⁸ However, medical schools often face competing priorities and few incentives to select rural students. After recruiting from these communities, schools and training programs should expose students to caring for underserved communities and otherwise motivate them to consider careers there. This focus for health professional training programs will require different resources than current programs to simply expand health professions workforce. Several existing models aimed at augmenting the primary care pipeline to underserved communities currently exist around the country.

- The Sophie Davis School of Biomedical Education within City University of New York works to increase access to medical training for local unrepresented minorities. The Sophie Davis School sponsors two pre-college programs to prepare motivated minority and disadvantaged high school students for medical programs. BS/MD program graduates are required to practice in designated shortage areas in New York for two years. In the past ten years, 80% of the 1,400 graduates from the Sophie Davis School have continued to practice in underserved areas across the state after their two year commitment ended.⁴⁹
- The federal Bureau of Health Professions' Health Careers Opportunity Program (HCOP) aims to augment and diversify the health care workforce by providing grants to disadvantaged students to attend health profession training schools. HCOP also introduces students to community-based

primary care settings.⁵⁰

- As one effort to “grow our own,” NACHC and health centers around the country have partnered with A.T. Still University to create new dental and medical schools designed to train physicians and dentists to serve specifically in underserved communities. This first of its kind effort will produce over 250 eligible dentists who could potentially work at a health center over the next 5 years and will produce hundreds more physicians eligible for health center employment after completing their residency in 2014. This will help bolster the recruitment and retention of qualified staff at health centers.
- Since 1996, several thousand graduates of Community HealthCorps, NACHC’s national AmeriCorps program,⁵¹ have provided one to two years of community service in health outreach and health education activities at health centers, while also learning about rewarding health careers. A recent survey found that more than 85% of HealthCorps members expressed a continued interest in a health care career after a year of community service.⁵²

Health Professions Training in Underserved Communities. Health care professionals are more likely to practice in underserved communities when they are exposed to training opportunities in these areas, such as at health centers. In fact, 87% of health centers report that they participate in at least one health profession training program, including working with Area Health Education Centers (AHEC), medical and other health professional schools, and residency programs.⁵³ Preparing students to serve these targeted areas must occur throughout a student or resident’s training, but only those programs that actually expose students to impoverished communities experiencing health disparities as well as primary care shortages can effectively broaden primary care’s reach. Simply expanding medical schools or their student capacity will not on its own adequately boost primary care supply because there is no reason to assume that practice patterns of graduates will differ from current patterns, and so any increase would be marginal at best.⁵⁴ Several programs actually support appropriate primary care-focused training efforts and should be expanded.

The federal Health Professions and Nurse Training Programs (Titles VII and VIII of the Public Health Service Act) support training and educational infrastructure at medical, dental and nursing schools and primary care residency programs that place residents in underserved areas. The Health Professions Training Programs are up for reauthorization, yet the Administration requested no appropriations for Title VII in FY2009.⁵⁵ Continued funding is a key factor in ensuring that more primary care physicians locate in underserved areas.⁵⁶ A recent analysis concluded that physicians who attended medical schools or residency programs with Title VII funding were more likely than other physicians to practice in low income or rural communities, and at health centers.⁵⁷ The Administration’s request for the Title VIII Nurse Training programs was almost one-third less than the funding level for the previous year at \$156 million, and included a proposal to eliminate the \$62 million Advanced Education Nursing program.

Beyond federal programs, state residency training programs are also important opportunities for preparing graduates to locate in and serve at risk communities. The Council on Graduate Medical Education (COGME) recently recommended to the Administration and Congress that they consider making Graduate Medical Education (GME) support through Medicare more flexible so that outpatient training in underserved communities could be supported. COGME specifically mentions training in health centers as a desirable option.⁵⁸ The federal government could use these billions of dollars to foster a more equitable distribution of physicians and improved access to care for Medicare beneficiaries by using these GME funds strategically.⁵⁹ However, the exclusive flow of GME funding to hospitals makes most affiliations between residency programs

and health centers financially non-viable for many of these fledgling partnerships. COGME also addressed this concern in a letter to CMS.⁶⁰ The difficulty of moving residency training out of hospitals and to underserved communities will likely require the attention of the Congress to revise outdated GME payment policy.

Placing Primary Care Professionals in Underserved Communities. Programs that emphasize both primary care and actual placement in underserved areas are the most critical for resolving the current primary care crisis. At least two federal programs directly place primary care professionals in federally-designated Health Professional Shortage Areas (HPSAs): the National Health Service Corps (NHSC) and the J-1 Visa Waiver program. These programs are very important to health centers' ability to cover their workforce need; 33% of urban and 40% of rural health centers rely on the NHSC loan repayment program, while 28% of urban and 38% of rural health centers rely on J-1 Visa Waiver program.⁶¹

Since its inception in 1972, the NHSC has supported over 28,000 primary and dental professionals through scholarships and loan repayments in return for service in HPSA-designated areas. Service commitment is a minimum of two years, and salaries are covered by the place of employment. In FY2006, 4,109 health care professionals were participating in the NHSC scholarship or loan repayment program. Half of these individuals practiced at a health center.⁶² At the same time, the NHSC Jobs Opportunity List for FY 2008 indicated that 4,888 positions went unfilled because of a lack of funding to support them. The majority (55%) of these vacancies were for primary care positions at health centers. Despite the number of unfilled positions, federal appropriations for the NHSC have steadily declined – from a peak of \$169.9 million in FY2004 to \$123.5 million in FY2008. At \$121 million, the Administration's FY2009 request continues this trend.⁶³

The NHSC has been particularly effective in pulling in new non-NHSC physicians especially in rural areas. NHSC also promotes long-term retention in rural service. In FY2006, 76% of participating clinicians continued working in their NHSC position for at least one year upon completion of their service obligations.⁶⁴ Beyond that, 40% of rural NHSC physicians remained in their assigned county or worked in other rural counties likely to have shortages as of 2001.⁶⁵ Expanding the NHSC or developing new programs with incentives other than loan repayment may be needed to sufficiently staff expanded health center capacity. If the NHSC were relied on to deliver roughly 16,000 to 18,000 new clinicians by 2015, NHSC program funding would need to be raised to between \$700 million and \$770 million by that time.⁶⁶

The J-1 Visa allows foreign nationals to enter to U.S. for educational purposes and requires that they then return to their home country for two years before applying for a U.S. immigrant visa, permanent residence, or another type of visa. The State Department issues waivers to the return-home requirement for primary care physicians who practice in designated HPSAs. A Government Accountability Office (GAO) survey of the states suggests that there were 3,128 waiver physicians in 2005 practicing in underserved areas – significantly higher than the number of U.S. physicians participating in the NHSC. About half were for physicians to practice in rural settings. The GAO found that only 46% of all waiver requests during FY 2005 were for physicians to practice primary care exclusively and another 5% were for physicians practicing both primary and specialty care. The number of waiver requests for non-primary care practices increased between 2003 and 2005, while the number overall has declined.⁶⁷

Over the last few years, the number of J-1 Visas has declined, triggered in large part by an expansion of H1-B

work-related visas and a real preference among residency programs to take H1-B foreign trained US citizens over J-1 Visa physicians. Since H-1B does not have the requirement of serving in shortage areas, this resource for states is in jeopardy. The Health Resources and Services Administration (HRSA) has recognized the decline in J-1 Visas due to residency programs “turning increasingly” to H1-B.⁶⁸ Policy changes are needed to either revitalize or replace this vital pipeline to underserved communities.

Many states also have programs to place primary care professionals in underserved areas. Just over 20% of health centers report relying on state loan repayment programs to bring needed clinical staff.⁶⁹ As one example of a state loan repayment program, the Massachusetts Community Health Center Primary Care Physician Loan Repayment Program offers forgivable loan payments of up to \$75,000 for participating primary care physicians who work full time at a Massachusetts health center for two to three years. The program is managed by the Massachusetts League of Community Health Centers and supported by donations from Bank of America, the Commonwealth of Massachusetts, Partners HealthCare System, and other corporations.⁷⁰

Payment Reforms. Policies aiming to ensure an adequate primary care supply must also address payment issues that create a disparity in salary between primary care and specialty care providers. With a reimbursement system biased toward specialty care, reforming the reimbursement system would narrow the salary gaps between primary care and specialty providers and encourage more students to enter primary care fields.

Facilitating Health Care Teams. State scope of practice standards set the boundaries by which key primary care providers, namely NPs and PAs, can deliver care. State policymakers must consider how these standards encourage or discourage primary care professionals to locate in and form teams in underserved areas. Some states, including Colorado and Pennsylvania, have dealt with primary care shortages in underserved areas by expanding scope of practice for NPs, PAs, CNMs, nurses, and dental hygienists.⁷¹ If health centers are to form medical or health care homes and maximize quality and efficiency, policies that facilitate team functions for patients will be needed.

CONCLUSION

This report documents the significant workforce expansions that will be needed to successfully expand the national Community Health Center Program into communities most likely to experience severe shortages of primary care, and consequentially, acute health disparities. Expansion may require more primary care professionals overall but the most pressing need is targeted policies that encourage more professionals to enter primary care in underserved areas. Current federal and state efforts to increase the number of primary care professionals, particularly those serving in underserved areas, are insufficient to achieve workforce numbers that can support health center expansion. To provide access for a growing population of uninsured, underinsured, and underserved people while realizing reduced disparities and improved efficiencies, health centers will need tens of thousands of primary care professionals in the next decade. It is vital to note that while health centers' goals are to reach 30 million and eventually 69 million patients, primary care providers and nurses are needed now. Additionally, health center patients will still need access to vital specialty services when appropriate. Future reports will determine other critical workforce needed for health centers to broaden their reach into underserved communities, especially dental and behavioral health care.

Workforce policy to support health center expansion must consider not only current workforce requirements in health centers, but also the changing nature of primary care practice. Chronic disease management, integration of behavioral health care, and care for an aging population are all important factors to be taken into account when examining staffing needs for the Community Health Center as a medical and health care home. Robust staffing is essential for meeting two major tasks of modern-day primary care: the full range of both preventive and episodic acute care, and management of chronic conditions. Because socioeconomic status of individuals or communities is known to adversely affect the delivery of preventive care,⁷² health centers must meet these needs for populations and communities at greatest risk of lacking both.

To produce the numbers of primary care health professionals that will be needed to staff health centers, not to mention the numbers needed to appropriately serve the needs of our overall health care system, several key steps will be essential.

1. Workforce development programs must be strengthened, stabilized, and expanded, fortifying the pipeline to primary care careers, and fostering opportunities for students to participate in primary care educational and training experiences, while also increasing exposure to primary care for health professional students.
2. Opportunities and incentives for health professionals entering primary care careers must be enhanced, to include placement and training opportunities in underserved areas, and training as members of interdisciplinary teams.
3. The provider payment system must be revised to reflect the essential role and value of primary care in the health care delivery system, attract more primary care professionals, and improve access to primary care and encourage coordinated, team-based care.
4. Leaders must carefully review state scope of practice laws to improve collaborative practices and improve location options for all primary care professionals.

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Appendix A

Methodology

To examine current and future staffing patterns in Community, Migrant, Homeless, and Public Housing Health Centers, we analyzed the federal Bureau of Primary Health Care's 2006 Uniform Data System (UDS). All federally-funded health centers (about 90% of all Federally-Qualified Health Centers, or FQHCs) must report UDS annually, including tabulated data on patient mix, services provided, staffing, and financing. For calendar year 2006, 1002 health center grantees with more than 6,000 sites serving about 15 million persons reported UDS.¹ Health center patient volume expanded to 18 million by 2008 nationally, including the roughly 10% of non-federally funded health centers. Because patient panel is tied to provider seen, our baseline only includes patients with a medical visit, as opposed to those with only dental or behavioral health visit. The vast majority of patients have a medical visit, and the **ACCESS for All America** plan envisions all patients relying on health centers for full medical care.

Given the focus of this report on medical personnel, we use the 2006 UDS to provide national and state counts of primary care providers and nurses, as well as counts of patients receiving medical care at health centers.² We define health providers as all 1) physicians, excluding psychiatrists, pathologists and radiologists, 2) physician assistants (PAs), 3) nurse practitioners (NPs), and 4) certified nurse midwives (CNMs). We included other specialist physicians, that is, those that provide non-primary care related services, because we could not isolate medical patients for these providers. However, these non-primary care physicians made up only 3% of all health center physicians in 2006 (excluding psychiatrists).

Information about staffing patterns in the UDS is based on full-time equivalents (FTE). A patient is an individual who has at least one encounter during the reporting year. An encounter is "a face-to-face contact between a patient and a provider who exercises independent professional judgment in the provision of services to the individual."³

To better understand variation in staffing patterns across health centers, we use several measures available in the UDS characterizing the grantees and their patients. We identify grantees that have *homeless*, *public housing* and *migrant* patients. Note that these patient categories are not mutually exclusive: it is possible for example to obtain funds for both public housing and homeless programs. We also distinguish whether grantees are located in *rural* and *urban* areas. Using either tertiles or quartiles, we also differentiate among grantees in terms of *sites* (1-3, 4-6, 7 or more); *Medicaid funding* (0-24%, 25-44%, and 45% or higher), percent of patients that are *elderly* (65+ years) (0-4%, 5-6%, 7-10% and 11% or higher), *uninsured* (0-27%, 28-39%, 40-55% and 56% or higher), and *minority* (0-32%, 33-63%, 64-86%, and 87% or higher).

This study sets out to estimate current staffing patterns and health centers' clinical staffing needs at the national and state level in order to enable health centers to reach the goals of the **ACCESS for All America** plan. This means reaching 30 million patients total in 2015, and then 69 million patients once health centers reach all 56 million medically disenfranchised. It is important to note that once we include

¹ For more information on UDS, see <http://www.bphc.hrsa.gov/uds>.

² According to the UDS Manual, grantees are required to report all "paid staff, volunteers, contracted personnel (paid based on worked hours), residents and preceptors. Individuals who are paid by the grantee on a fee-for-service basis only are not counted in the FTE column since there is no basis for determining their hours." (See <ftp://ftp.hrsa.gov/bphc/pdf/uds/2008udsmanual.pdf>, p. 27.)

³ See 2006 UDS User Manual, <ftp://ftp.hrsa.gov/bphc/pdf/uds/2008udsmanual.pdf>, p. 30. If more than one provider provides care during a single day, the grantee can decide which provider is to be given credit for the encounter.

U.S. territories and the one state for which medical disenfranchisement data was not available for (West Virginia),⁴ our national patient targets are actually slightly higher by less than 1 million. Our projections of current future staffing needs are based on two benchmark values: the 1) current median *provider*-to-patient ratio and 2) staffing patterns that correspond to the 1500-to-1 *physician*-to-patient ratio observed in other medical settings (see **Appendix B**).

Assessing the current shortfall of primary care professionals in health centers requires some assumptions. Patient-to-*physician* ratios are more commonly used for comparing staffing patterns so we have used this more common metric for estimating staffing sufficiency currently and for projections. In **Appendix B**, we note that many of the integrated service delivery networks, the VA, the Army have panel sizes ranging from 1100 patients per physician to 1700, and that 1500 seems to be the standard. These settings often use NPs, PAs and other professionals in addition to their physician staff. For the sake of estimating the potential primary care provider need in health centers, we assumed that these other settings employ NPs and PAs similarly to the average health center. Based on our exploration of patient to physician ratios in other primary care settings we assessed needed workforce to achieve a patient-to-physician ratio of 1500:1. For each physician in a health center currently, there are 1.57 total providers (physicians + NP + PA + CNM), meaning that a 1500:1 patient-to-*physician* ratio corresponds to a patient-to-*provider* ratio of 958:1. This ratio (958:1) permits us to ground workforce needs in the common measure of patient-to-physician while estimating need for all providers. The difference in patient-to-*provider* ratios permits calculation of the shortfall of providers in health centers compared to these other health care settings.

While recognizing substantial variation across states and different types of centers, our analysis assumes that the current mix (staffing ratios) of different medical personnel in health centers at the national level will prevail into the future. Table A shows the current number of different types of medical staff and the corresponding rates for the two benchmark values. The median number of patients per provider is 1,092 across all health centers, which is equivalent to 91.6 providers per 100,000 patients. Under the national comparison, it appears that health center fall short of their primary care clinical staffing needs.

Table A. Current Staffing Patterns and Benchmark Rates for Workforce Projections							
	2006 CHC Staffing Patterns			Benchmark Rates			
				Median Patient-to-Provider Ratio (1,092:1)		Patient-to-Physician Ratio (1,500:1)	
	Staff FTEs [‡]	Rate per 100,000	Staffing Ratio	Rate per 100,000	Patients/Staff	Rate per 100,000	Patients/Staff
Physicians	7,595	57.7	0.64	58.5	1,709.0	66.7	1,500.0
NPs/PAs/CNMs*	4,292	32.6	0.36	33.1	3,024.5	24.1	4,154.6
Total Health Providers**	11,887	90.4	1.00	91.6	1,092.0	104.3	958.4
Nurses	8,776	66.7	0.74	67.6	1,479.1	77.0	1,298.2
TOTAL STAFF	20,663	N/A	N/A	N/A	N/A	N/A	N/A

Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.
[‡] Full-time equivalent.
* Nurse practitioners, physician assistants, certified nurse midwives.
** The rates for 2006 staffing patterns are based on 13,152,687 patients. For example, the “total” rate for providers is equal to 90.4 = (100,000) x (11,887/13,152,687). The patients-to-staff ratio are equal to the reciprocal of this rate times 100,000.

⁴ For more information, see NACHC and the Robert Graham Center. *Access Denied: A Look at America’s Medically Disenfranchised*. March 2007. www.nachc.com/research-reports.cfm.

Average and median patient panel size (or provider-to-patients ratio) varies little across different categories of health center and patient mix (see Table B).⁵ However, when we look at physician-to-patients and physicians-to-other providers (NPs, PAs, and CNMs) across different health center categories we see tremendous variation (Tables C and D).

Table B. Patients per Provider* for Health Centers by Type and Patient Mix, 2006					
Health Center Type or Patient Mix	n	Mean	Median	Top 25%	Bottom 75%
All	1002	1159.9	1092	906.6	1325.9
Migrant	140	1337.4	1180.7	986.6	1401.1
Homeless	184	1131.2	1128.3	816.2	1355.4
Public housing	37	1182.3	1142.3	886.5	1332.4
Urban	540	1174.7	1118.2	911.7	1337
Rural	434	1135.9	1065.3	898.3	1293.8
number of sites: 0-3	456	1150.9	1089.9	907.1	1336.3
number of sites: 4-6	238	1156.1	1078.6	911.7	1310.8
number of sites: 7-91	308	1176.3	1102.9	901.2	1329.5
%Medicaid Funding: 0-24%	334	1219.8	1121.8	922.1	1394.9
%Medicaid Funding: 25-44%	333	1124.3	1066.8	904.6	1267.2
%Medicaid Funding: 45-99%	333	1134.8	1100.7	887.1	1316.6
%Uninsured: 0-27%	250	1044.3	1020.2	857.6	1181.4
%Uninsured: 28-39%	250	1097.5	1048.4	902.8	1250.2
%Uninsured: 40-55%	250	1167.2	1117.4	949.9	1357.6
%Uninsured: 56-100%	249	1335.8	1223.5	992.7	1579.6
%Minority: 0-32%	248	1097	1049.1	898	1220.8
%Minority: 33-63%	247	1141.5	1089	912.8	1336.3
%Minority: 64-86%	247	1161.8	1133	923.4	1351.2
%Minority: 87-100%	247	1228.1	1118.7	886.5	1355.5
%Elderly: 0-4%	246	1262.1	1139.3	918.7	1447.2
%Elderly: 5-6%	246	1184.7	1126.5	943.8	1370.3
%Elderly: 7-10%	246	1108.9	1092.8	898.8	1270.7
%Elderly: 11-40%	246	1094.4	1045.5	889.4	1235.1
Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.					
* Includes physicians, nurse practitioners, physician assistants, and certified nurse midwives.					

⁵ We found little difference for JCAHO accredited centers (not shown).

**Table C. Patients per Physician for Health Centers
by Type and Patient Mix, 2006**

Health Center Type or Patient Mix	n	Mean	Median	Top 25%	Bottom 75%
All	1002	2950.4	1841.2	1438.5	2437
Migrant	140	3281.6	1930	1571.2	2571
Homeless	184	4861.9	1965.2	1484.4	2729.8
Public housing	37	2392.7	1600.2	1305	2178.3
Urban	540	2915.8	1797.7	1394.9	2314
Rural	434	3093.1	1940.7	1586.7	2719
number of sites: 0-3	456	3063.2	1841	1409.4	2657.6
number of sites: 4-6	238	2297.3	1851.3	1449.7	2526.8
number of sites: 7-91	308	3287.3	1832.7	1430.4	2324.9
%Medicaid Funding: 0-24%	334	4610.9	2126	1653	3272.8
%Medicaid Funding: 25-44%	333	2194.8	1825.7	1442.8	2247.1
%Medicaid Funding: 45-99%	333	2108.7	1659.7	1330	2144.2
%Uninsured: 0-27%	250	2181.8	1591.5	1304.8	2016.1
%Uninsured: 28-39%	250	2279.9	1753.3	1398.5	2129.5
%Uninsured: 40-55%	250	2455.6	1914.2	1561.7	2588.1
%Uninsured: 56-100%	249	4921.8	2314.5	1807.8	3510.6
%Minority: 0-32%	248	3039.5	1906	1543.8	2528.1
%Minority: 33-63%	247	2539.7	1898.2	1447.5	2680
%Minority: 64-86%	247	3055.8	1874.5	1478.6	2474.5
%Minority: 87-100%	247	3254.1	1652.6	1328.7	2289.4
%Elderly: 0-4%	246	4196.3	2090.1	1584.5	3095.3
%Elderly: 5-6%	246	2218.6	1848.7	1451.5	2377.2
%Elderly: 7-10%	246	2191.4	1738	1378.1	2185.5
%Elderly: 11-40%	246	3247.8	1773.3	1415.1	2347.8

Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.

Table D. Physicians per NP/PA/CNM* for Health Centers by Type and Patient Mix, 2006					
Health Center Type or Patient Mix	n	Mean	Median	Top 25%	Bottom 75%
All	1002	2.45	1.46	0.83	2.55
Migrant	140	2.59	1.49	0.81	2.48
Homeless	184	1.91	1.22	0.52	2.47
Public housing	37	3.5	1.85	0.94	4.01
Urban	540	2.85	1.67	0.96	2.88
Rural	434	1.92	1.2	0.67	1.96
number of sites: 0-3	456	2.59	1.3	0.72	2.62
number of sites: 4-6	238	2.6	1.38	0.87	2.33
number of sites: 7-91	308	2.14	1.63	0.94	2.66
%Medicaid Funding: 0-24%	334	1.48	1.05	0.55	1.84
%Medicaid Funding: 25-44%	333	2.55	1.5	0.94	2.38
%Medicaid Funding: 45-99%	333	3.35	1.89	1.04	3.51
%Uninsured: 0-27%	250	3.47	1.67	1.1	2.89
%Uninsured: 28-39%	250	2.32	1.58	1	2.75
%Uninsured: 40-55%	250	2.54	1.46	0.79	2.46
%Uninsured: 56-100%	249	1.54	1.03	0.57	1.84
%Minority: 0-32%	248	1.75	1.19	0.72	1.84
%Minority: 33-63%	247	2.32	1.33	0.74	2.38
%Minority: 64-86%	247	2.18	1.59	0.9	2.63
%Minority: 87-100%	247	3.64	1.8	1.04	3.62
%Elderly: 0-4%	246	2.05	1.11	0.56	2.33
%Elderly: 5-6%	246	2.13	1.66	0.99	2.66
%Elderly: 7-10%	246	3.77	1.63	0.94	2.86
%Elderly: 11-40%	246	1.97	1.35	0.87	2.19
Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.					
*Nurse practitioners, physician assistants, certified nurse midwives.					

The national comparison benchmark is based on the simplifying assumption that future health center patients and sites where they obtain care should be staffed similarly to other primary care settings. This aggregate assessment is made somewhat more complicated if future expansion occurs in places with very different staffing ratios than the aggregate, national picture. For example, in Alaska physicians constitute just 29% of all providers compared to 71% in Illinois. As noted in the report, state variation may also reflect different scope of practice laws and physician preferences. Tables E and F below outline health center workforce staffing patterns by state, as well as future primary care workforce need by state.

**Table E. Health Center Workforce Characteristics Current Staffing Ratios
by State and U.S. Territory, 2006**

State	Current Workforce					Ratios		
	Nurse FTEs	NP, PA, and CNM* FTEs	Physician† FTEs	Total Primary Care Provider‡ FTEs	Medical Patients	Patients-to-Physician†	Patients-to-Provider‡	Physicians-to-NPs/PAs/CNMs*
Alabama	191.2	57.0	116.4	173.4	251,288	2,159.6	1,449.6	2.04
Alaska	42.2	75.7	30.9	106.6	65,945	2,132.8	618.6	0.41
Arizona	159.6	69.4	184.3	253.7	301,887	1,638.1	1,190.2	2.66
Arkansas	101.9	28.4	61.6	90.0	105,118	1,705.6	1,167.7	2.17
California	562.7	584.7	1,005.8	1,590.5	1,886,741	1,875.9	1,186.3	1.72
Colorado	183.7	177.4	208.1	385.6	370,614	1,780.6	961.2	1.17
Connecticut	95.2	76.6	93.8	170.4	157,842	1,683.1	926.2	1.22
Delaware	15.2	9.6	15.2	24.8	22,131	1,460.8	892.7	1.57
Dist. of Columbia	46.2	29.7	70.0	99.7	73,998	1,057.6	742.4	2.36
Florida	400.8	150.4	328.0	478.4	605,615	1,846.6	1,265.9	2.18
Georgia	151.3	65.1	125.9	191.0	234,961	1,867.0	1,230.4	1.93
Hawaii	60.8	35.7	70.3	106.0	82,744	1,176.5	780.7	1.97
Idaho	56.9	44.9	38.1	83.0	84,888	2,226.9	1,022.5	0.85
Illinois	372.2	177.4	484.0	661.4	794,042	1,640.5	1,200.5	2.73
Indiana	123.4	61.1	82.3	143.4	135,382	1,645.6	944.1	1.35
Iowa	83.7	40.9	40.4	81.4	89,596	2,215.5	1,101.0	0.99
Kansas	48.1	29.2	18.0	47.3	59,065	3,274.1	1,249.8	0.62
Kentucky	161.8	56.9	105.8	162.6	198,808	1,880.0	1,222.4	1.86
Louisiana	71.5	31.6	59.1	90.7	102,227	1,728.9	1,127.2	1.87
Maine	58.4	60.7	67.4	128.1	125,473	1,860.8	979.6	1.11
Maryland	132.9	49.6	123.6	173.2	178,559	1,445.2	1,031.2	2.49
Massachusetts	358.1	152.9	289.8	442.7	379,920	1,311.1	858.2	1.90
Michigan	220.4	122.8	177.4	300.2	336,347	1,895.8	1,120.4	1.45
Minnesota	72.9	46.8	59.6	106.4	110,838	1,860.3	1,042.0	1.27
Mississippi	233.4	86.4	121.2	207.5	270,945	2,235.9	1,305.5	1.40
Missouri	200.5	89.8	129.6	219.3	241,584	1,864.8	1,101.5	1.44
Montana	71.5	26.9	26.4	53.3	65,347	2,472.5	1,225.8	0.98
Nebraska	28.8	14.6	15.4	30.0	36,270	2,350.6	1,209.8	1.06
Nevada	--	17.3	24.5	41.8	62,951	2,571.5	1,505.3	1.41
New Hampshire	80.0	36.7	42.4	79.1	63,127	1,488.5	798.4	1.16
New Jersey	158.7	62.1	160.9	223.0	231,117	1,436.6	1,036.6	2.59
New Mexico	107.9	77.3	112.7	190.0	205,401	1,822.7	1,081.0	1.46
New York	763.2	332.1	705.5	1,037.6	1,023,048	1,450.2	986.0	2.12
North Carolina	148.6	83.7	139.0	222.7	278,830	2,006.1	1,252.2	1.66
North Dakota	23.2	13.4	7.1	20.5	21,332	3,021.5	1,042.1	0.53
Ohio	211.5	53.7	170.3	224.0	284,611	1,671.7	1,270.8	3.17
Oklahoma	35.6	24.1	38.9	62.9	85,157	2,191.4	1,353.0	1.61

State	Current Workforce					Ratios		
	Nurse FTEs	NP, PA, and CNM* FTEs	Physician† FTEs	Total Primary Care Provider‡ FTEs	Medical Patients	Patients-to-Physician†	Patients-to-Provider‡	Physicians-to-NPs/PAs/CNMs*
Oregon	159.1	102.1	96.1	198.2	162,022	1,686.7	817.7	0.94
Pennsylvania	243.6	112.2	233.5	345.7	433,454	1,856.3	1,253.8	2.08
Rhode Island	84.2	29.7	59.1	88.9	89,325	1,510.7	1,005.2	1.99
South Carolina	268.8	74.8	163.3	238.1	281,869	1,726.3	1,183.8	2.18
South Dakota	47.4	28.6	15.8	44.4	47,259	2,987.3	1,064.6	0.55
Tennessee	226.7	97.4	105.2	202.6	247,615	2,354.4	1,222.2	1.08
Texas	468.9	197.5	299.9	497.4	619,866	2,066.7	1,246.2	1.52
Utah	19.5	34.2	33.9	68.1	79,889	2,355.2	1,173.5	0.99
Vermont	61.7	24.6	27.9	52.5	52,004	1,867.3	991.3	1.13
Virginia	191.9	64.1	109.7	173.8	185,220	1,688.4	1,065.7	1.71
Washington	317.9	177.5	291.7	469.3	470,110	1,611.4	1,001.8	1.64
West Virginia	256.5	123.5	159.1	282.5	292,944	1,841.7	1,036.9	1.29
Wisconsin	69.6	50.4	124.7	175.1	125,361	1,005.5	715.9	2.47
Wyoming	22.0	9.5	8.3	17.8	19,462	2,344.8	1,091.5	0.87
Puerto Rico ^x	456.2	--	279.5	279.5	353,881	1,266.1	1,266.1	--
Other US Territories	48.3	13.3	38.4	51.6	68,657	1,787.9	1,330.6	2.91

Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS.

FTEs= Full-Time Employed

* Nurse Practitioners, Physician Assistants, Certified Nurse Midwives

† Physicians exclude psychiatrists, pathologists and radiologists. Only 3% of all remaining physicians are non-primary care specialists.

‡ Providers include physicians (except psychiatrists, pathologists and radiologists), nurse practitioners, physician assistants, and certified nurse midwives.

^x Puerto Rico does not have licensing provisions for nurse practitioners, physician assistants, and certified nurse midwives.

Table F. Health Center Future Workforce Need by State and U.S. Territories

State	Patients-to-Provider Ratio *	30 Million Health Center Patient Target**	69 Million Health Center Patient Target***	National Comparison†		State Health Center Average ^o			Maximum*	
				30 million patients	69 million patients	30 million patients	69 million patients	30 million patients	69 million patients	
Alabama	1,449.6	951,730	2,799,507	993	2,285	657	1,510	993	2,285	
Alaska	618.6	157,739	363,675	165	379	255	587	255	587	
Arizona	1,190.2	654,933	1,567,289	684	1,572	550	1,266	684	1,572	
Arkansas	1,167.7	253,375	619,127	264	608	217	499	264	608	
California	1,186.3	3,194,431	5,884,068	3,334	7,669	2,693	6,194	3,334	7,669	
Colorado	961.2	631,879	1,276,373	660	1,517	657	1,512	660	1,517	
Connecticut	926.2	329,190	609,754	344	790	355	817	355	817	
Delaware	892.7	100,217	305,348	105	241	112	258	112	258	
Dist.of Columbia	742.4	107,088	156,865	112	257	144	332	144	332	
Florida	1,265.9	2,821,226	8,755,761	2,945	6,773	2,229	5,126	2,945	6,773	
Georgia	1,230.4	595,510	1,570,748	622	1,430	484	1,113	622	1,430	
Hawaii	780.7	105,188	108,327	110	253	135	310	135	310	
Idaho	1,022.5	237,446	642,025	248	570	232	534	248	570	
Illinois	1,200.5	1,288,606	2,471,890	1,345	3,094	1,073	2,469	1,345	3,094	
Indiana	944.1	321,606	717,666	336	772	341	784	341	784	
Iowa	1,101.0	241,960	619,216	253	581	220	505	253	581	
Kansas	1,249.8	419,593	1,421,405	438	1,007	336	772	438	1,007	
Kentucky	1,222.4	388,925	861,462	406	934	318	732	406	934	
Louisiana	1,127.2	512,208	1,578,001	535	1,230	454	1,045	535	1,230	
Maine	979.6	164,778	197,788	172	396	168	387	172	396	
Maryland	1,031.2	293,683	559,000	307	705	285	655	307	705	
Massachusetts	858.2	776,705	1,649,711	811	1,865	905	2,082	905	2,082	
Michigan	1,120.4	871,675	1,993,231	910	2,093	778	1,789	910	2,093	
Minnesota	1,042.0	298,385	689,009	311	716	286	659	311	716	
Mississippi	1,305.5	648,493	1,591,073	677	1,557	497	1,142	677	1,557	
Missouri	1,101.5	977,715	2,814,360	1,021	2,347	888	2,042	1,021	2,347	
Montana	1,225.8	102,585	173,382	107	246	84	192	107	246	
Nebraska	1,209.8	73,987	162,875	77	178	61	141	77	178	
Nevada	1,505.3	227,669	669,951	238	547	151	348	238	547	
New Hampshire	798.4	102,105	212,721	107	245	128	294	128	294	
New Jersey	1,036.6	322,592	418,417	337	774	311	716	337	774	
New Mexico	1,081.0	327,048	573,290	341	785	303	696	341	785	

State	Patients-to-Provider Ratio *	30 Million Health Center Patient Target**	69 Million Health Center Patient Target***	National Comparison†		State Health Center Average [∞]		Maximum*	
				30 million patients	69 million patients	30 million patients	69 million patients	30 million patients	69 million patients
New York	986.0	1,757,250	3,397,690	1,834	4,219	1,782	4,099	1,834	4,219
North Carolina	1,252.2	817,268	2,140,311	853	1,962	653	1,501	853	1,962
North Dakota	1,042.1	47,441	117,007	50	114	46	105	50	114
Ohio	1,270.8	622,526	1,441,294	650	1,495	490	1,127	650	1,495
Oklahoma	1,353.0	182,840	409,232	191	439	135	311	191	439
Oregon	817.7	606,051	1,695,256	633	1,455	741	1,705	741	1,705
Pennsylvania	1,253.8	707,057	1,230,484	738	1,698	564	1,297	738	1,698
Rhode Island	1,005.2	176,204	362,506	184	423	175	403	184	423
South Carolina	1,183.8	787,858	2,178,165	822	1,892	666	1,531	822	1,892
South Dakota	1,064.6	80,556	155,882	84	193	76	174	84	193
Tennessee	1,222.2	591,097	1,470,544	617	1,419	484	1,112	617	1,419
Texas	1,246.2	1,909,337	5,257,632	1,993	4,584	1,532	3,524	1,993	4,584
Utah	1,173.5	404,398	1,293,952	422	971	345	793	422	971
Vermont	991.3	67,948	84,184	71	163	69	158	71	163
Virginia	1,065.7	408,629	968,826	427	981	383	882	427	981
Washington	1,001.8	1,164,670	2,674,298	1,216	2,796	1,163	2,674	1,216	2,796
West Virginia‡	1,036.9	585,888	1,386,602	612	1,407	565	1,300	612	1,407
Wisconsin	715.9	362,588	897,728	378	871	506	1,165	506	1,165
Wyoming	1,091.5	48,697	125,507	51	117	45	103	51	117
Puerto Rico‡	1,266.1	707,762	1,675,037	739	1,699	559	1,286	739	1,699
Other U.S. Territories‡	1,330.6	137,314	324,976	143	330	103	237	143	330

Source: 2006 Uniform Data System, Bureau of Primary Health Care, HRSA, DHHS. NACHC and the Robert Graham Center. Access Denied: A Look at America's Medically Disenfranchised. March 2007. www.nachc.com/research-reports.cfm. Analysis by NACHC and the Robert Graham Center.

Note: State projections are based on state-level estimates of the number of medically disenfranchised persons from our earlier Access Denied report.

* P providers include full-time employed physicians (except psychiatrists, pathologists and radiologists), nurse practitioners, physician assistants, and certified nurse midwives.

** Assumes every state will grow to serve 26% of their state's 2005 medically disenfranchised population, plus current medical patients.

*** Assumes every state will grow to serve 100% of their state's 2005 medically disenfranchised population, plus current medical patients.

† Based on a national benchmark ratio of 1:1500 physicians-to-patients, equivalent to 1:958 provider-to-patients.

∞ Based on the average provider-to-patients ratio for health centers in each state.

* Maximum provider projection between the national benchmark and state health center averages.

‡Because data were not available for West Virginia or the U.S. territories (see Access Denied), we assume the twice the number of patients currently served.

Appendix B

Structuring Primary Care: Different Models

This Appendix presents background on precedents for structuring provider work—specifically, the effect of panel sizes (number of patients assigned to a particular provider)—and their effect on primary care delivery. We highlight different models in the United States and internationally.

Health Maintenance Organizations (HMOs): Health maintenance organizations (HMOs) are often held up as models for disease management. Although most HMOs fall short of delivering all elements of the patient-centered medical home,¹ examining physician workload or practice structure in these organizations may inform discussions of expanding the health center workforce.² HMO panel sizes appear to be slightly smaller than national averages cited in the United States. A study by Weiner et al stated that in 2000, the average primary care panel size for a Kaiser Permanente primary care provider could be computed as 1:1754 and for Group Health Cooperative (in which the chronic care model was developed) 1:1490.³

The Veteran's Administration: Whether patient comorbidity and socioeconomic stress among health center patients is comparable to those enrolled in HMOs is unclear. The Veterans' Health Administration (VA) is an entirely publicly funded health service caring for patients with significant co-morbidities.⁴ The VA made primary care reorganization a major part of its structural reorganization in the late 1990s. In doing so, it borrowed extensively from the HMO model.⁵ Similar to HMOs, the VA is now an integrated health system in which patients have access to mental health and specialty care. The VA directives specify specific numbers of providers and other staff necessary to provide care for specific numbers of patients. The subsequent responsibility of these primary care teams is accessible, comprehensive and coordinated care. Based on an army model of one provider and 2.8 support staff for a panel of 1,178, the VA has specified one provider to 2.17 support staff for 1,200 patients, although panels can range from 1,000-4,000. As of 2003, the mean panel size in the VHA was 1,088 for 1.0 full-time equivalent (FTE) physician and 789 for 1.0 FTE non-physician provider.⁶

Global Models: The United Kingdom: Internationally, many health systems have reorganized primary care to better manage chronic illness and patient access. In the United Kingdom, larger practices have reduced panel size for clinicians with some suggestion that chronic disease management was improved in the process. For example, in a recent study by Campbell et al, the average panel size for a solo practitioner in London was 2,405, while in practices with more than 3 or 5 physicians, it was 2,136 and 1,937, respectively. Consultation length and practice performance scores on primary care disease management were higher in these latter practices. However, patient satisfaction, and measures of continuity and access were higher in smaller practices.⁷ Interestingly, although smaller practices had decreased performance scores, this was not related to the number of patients per physician, but to the length of visits (which was shorter in practices with few physicians and larger panel sizes). Other UK studies have also related decreased panel size to longer visits and higher quality services, although larger practices that enable smaller panels are consistently associated with decreased continuity of care and patient access. A study examining care in the United Kingdom found that in practices where staff reported a better team

atmosphere (including cooperation and shared goals around disease management), quality, satisfaction, continuity and access had better practice performance scores.⁸ This finding suggests that restructuring work may be more effective than simply decreasing physician workload or increasing the number of physicians.

Health Center Models in the United States: Many health centers have taken elements from all of the above models in an effort to reorganize the delivery of care. A recent publication by the California Healthcare Foundation⁹ presents several examples including: expanding the role of medical assistants (MA), LPNs and RNs, creating new roles, such as the health promoter or population management assistant, or establishing new locations of care, such as a planned care center for chronic conditions that coordinates referrals and care for several clinics. For many of these innovations to take place, expanding the role of the MA in patient care has meant increasing the number of MA's to physician to up to two for one physician. Centers that have attempted several different measures, such as dividing chronic care education and management completely from physician care, co-locating staff, utilizing computerized triage algorithms or communicating with patients by e-mail have been able to document high patient and staff satisfaction and increased productivity. Programs such as Community Care of North Carolina have also been able to demonstrate cost savings and improved chronic disease management by intensive case management of high risk patients in collaboration with health centers.¹⁰ Additionally, in recent years several health centers from around the country participated in a finance and practice redesign collaborative that transforms care delivery in ways that enhance quality while also sustaining the cost of the chronic care model. Initiated by the Health Resources and Services Administration, this pilot has developed best practices and a series of measures that gauge performance.¹¹

¹ For more information, see American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Osteopathic Association. "Joint Principles of the Patient-Centered Medical Home." February 2007. <http://www.aafp.org/online/en/home/media/browse/advocacy/aafp-advocacy-focus/patient-centered-medical-home.html>.

² Wagner E, Austin BT, and Von Korff M. "Organizing Care for Patients with Chronic Illness." 1996 *Milbank Quarterly* 74(4):511-44.

³ Alexander G, Kurlander J, and Wynia MK. "Physicians in Retainer ('Concierge') Practice: A National Survey of Physician, Patient and Practice Characteristics. 2005 December *Journal of General Internal Medicine* 20(12):1079-83.

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⁵ Agha Z, Lofgren RP, VanRuiswyk JV, and Layde PM. "Are Patients at Veterans Affairs Medical Centers Sicker?: A Comparative Analysis of Health Status and Medical Resource Use." November 2000 *Archives of Internal Medicine* 160(21):3252-7.

⁶ Yano E, Simon BF, Lanto AB, and Rubenstein LV. "The Evolution of Changes in Primary Care Delivery Underlying the Veterans Health Administration's Quality Transformation." December 2007 *American Journal of Public Health* 97:2151-9.

⁷ Huang P, et al. "Variations in Nurse Practitioner Use in Veterans Affairs Primary Care Practices." August 2004 *Health Services Research* 39(4 (Part 1)):887-904.

⁸ Campbell S, et al. Identifying Predictors of High Quality Care in English General Practice: Observational Study. October 2001 *British Medical Journal* 323:1-6.

⁹ Bodenheimer T, Wagner EH, and Grumbach K. *Building Teams in Primary Care: Lessons Learned*. Oakland, CA: California Healthcare Foundation 2007.

¹⁰ Ricketts T, et al. *Evaluation of Community Cares of North Carolina Asthma and Diabetes Management Initiatives: January, 2000-December, 2002*. Chapel Hill, NC: Cecil G Sheps Center for Health Services Research, University of North Carolina; 2004 April 15 2004.

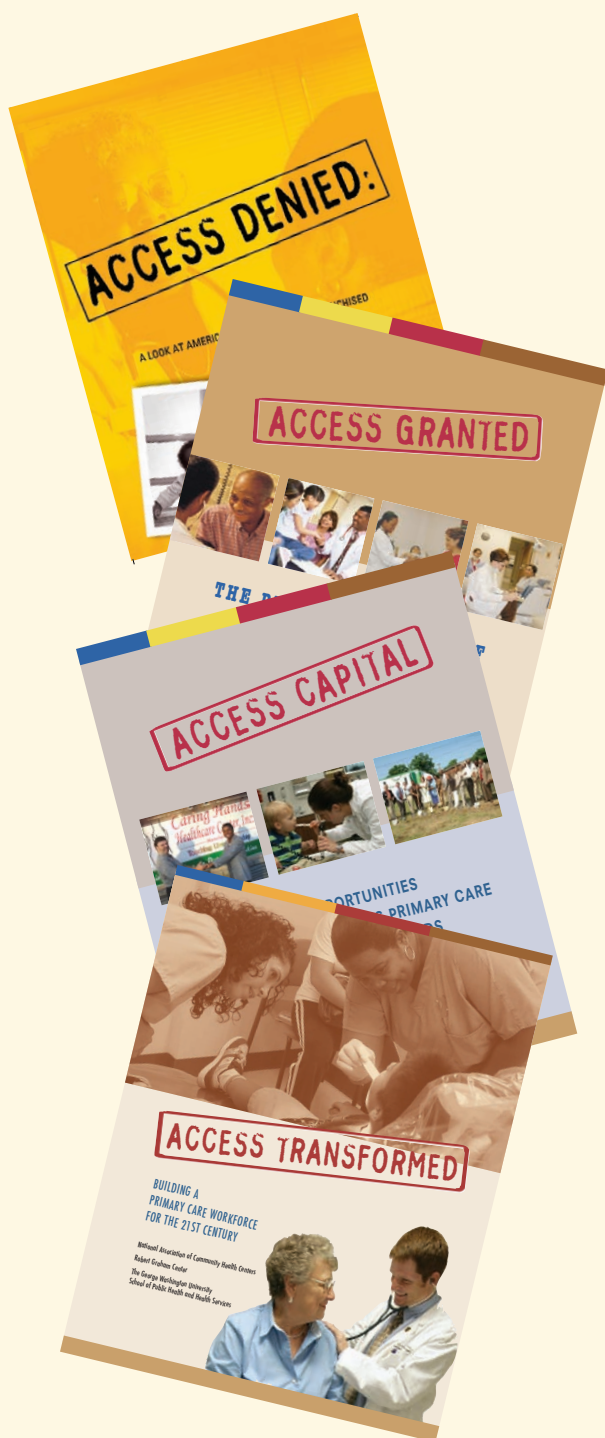
¹¹ For more information, see The Health Disparities Collaboratives, "The Business Case/Redesign," www.healthdisparities.net/hdc/html/collaboratives.topics/business.case.redesign.aspx.

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