

Weathering the Practitioner Workforce Shortage

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Publisher's note: The print version of this article inadvertently omitted reference to the central role the Kate B. Reynolds Charitable Trust played in the formation and deliberation of the North Carolina Institute of Medicine Task Force on Primary Care and Specialty Supply. This oversight is corrected within the text.

Growth in the overall population, and particularly growth among older adult populations, will have significant implications for North Carolina's health care system. The state's population is expected to grow by 39% over the next 25 years (July 2005-2029). The population of older adults age 65 or older is expected to grow more quickly, by 107% during the same time period, and the cohort of adults age 75 or older will grow by 100%.¹ On average, people make approximately 3 visits per year to a physician's office or clinic. However, visit rates vary by age: in 2003, 25-34 year olds made 2.3 annual visits to a physician's office or clinic, whereas 65-74 year olds made 6.2 visits and 75-84 year olds made 7.3 visits.² In addition to rapid growth among older adult

populations, North Carolina is experiencing growth in the number of people with chronic illnesses.^{a,3} These 3 factors—growth of the overall population, aging of the population, and increased prevalence of chronic illnesses—will create increased demand on the health care system. Within 25 years, the confluence of these factors will create a perfect storm of health care need. Absent any meaningful change in production or retention, the supply of health care practitioners will not grow sufficiently to meet this need.

Physicians, physician assistants (PAs), nurse practitioners (NPs), and certified nurse midwives (CNMs) comprise the health care workforce needed to diagnose and treat individual patients.

Having access to these practitioners contributes to the overall well-being of our population. While the exact relationship of overall practitioner supply to population health measures is disputed,⁴ specific contributions of physicians, PAs, NPs, and CNMs to individual health is not in doubt. The consequences of not being able to see health care practitioners when needed are clear.

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^a Between 1987 and 2002, there was a significant increase in the treated disease prevalence of certain chronic diseases such as cerebrovascular diseases (161% increase); kidney problems (99% increase); pulmonary conditions (90% increase); diabetes (64% increase); the presence of abnormal or elevated lipids (fatty molecules) in the blood (437% increase) with cholesterol being most common; and certain back problems (78%).

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Studies have shown people with less access to medical care live shorter lives, with more disability and lower productivity.⁵

No one currently knows the optimal number of or type of practitioners needed to optimize population health. Yet, by most measures, North Carolina has neither too many nor too few physicians. North Carolina had 20.7 physicians to every 10 000 people in 2005, which is slightly less than the national average. If nothing is done to change the supply of practitioners in North Carolina, the ratio of physicians-to-population is expected to decline by 8% by 2020 and by 21% by 2030. The ratio of all practitioners-to-population, including PAs, NPs, and CNMs, is expected to drop between 2% and 13% by 2030.

The practitioner workforce shortage is not only a problem North Carolina will face in the future; practitioner shortages currently exist in many areas of the state. Many counties have experienced a decline over the last 5 years in primary care practitioners, psychiatrists, general surgeons, and practitioners delivering babies. In addition, the state has far fewer minorities in these health professions than their representation in the population.

The Kate B. Reynolds Charitable Trust recognized these issues and asked The North Carolina Institute of Medicine (NC IOM) to convene the Task Force on Primary Care and Specialty Supply to analyze current and projected trends in practitioner supply and to examine whether the existing production of physicians, PAs, NPs, and CNMs would address the state's growing health care needs. In addition to providing the impetus for the task force, the Kate B. Reynolds Charitable Trust graciously funded the work and offered its years of experience increasing practitioner supply in underserved areas of the state to guide and inform the task force. The task force was a collaborative effort with the North Carolina Area Health Education Centers Program (AHEC), the Southeast Regional Workforce Center, and the North Carolina Health Professions Data System in the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill (UNC-CH). The task force met for more than a year, and its work culminated in a one-day summit to obtain feedback from a larger group of practitioners, leaders of academic health centers and health professional schools, and community leaders. This issue brief summarizes the findings of the task force along with its priority recommendations. The paper is organized into 4 sections: overview of future supply, areas of the state experiencing persistent shortages, trends in practitioner supply by practitioner specialty (including primary care), and underrepresentation of minorities in health professions.

Overall Supply

For most of the last 20 years, North Carolina experienced a steady increase in the ratio of practitioners-to-population because the number of

licensed practitioners grew faster than the population. However, the rate of growth has slowed over the last 5 years. The physician-to-population ratio increased by approximately 2.1% annually between 1985 and 2000 but has slowed to a 0.9% growth rate since 2000.

The physician workforce is aging. A sizable portion of physicians are likely to retire in the next 25 years, and older physicians who do not retire tend to work fewer hours in direct patient care. A significant proportion of nurse practitioners and, to a lesser extent, physician assistants also will reach retirement age within the next 25 years. Absent significant increases in production, in-migration, or retention of practitioners in North Carolina, the supply of practitioners is unlikely to keep up with growing demand. Assuming current growth trends, the number of primary care and specialty practitioners is expected to grow between 23% and 39% between 2005 and 2030 while the population is expected to grow 42% during this same time period. The aging of the population and increased number of people with chronic illnesses will lead to the growing demand for health services beyond that due to population growth.

It is impossible to fully predict the demand for and supply of practitioner services 25 years into the future. There are a number of different factors that must be considered in projecting practitioner supply and increased demand for health services. Some of these factors include the anticipated growth in supply of new physicians, PAs, NPs, and CNMs; anticipated exodus of practitioners from the profession (due to death, retirement, moving out of state, or other factors); growth in the overall state population; aging of the population (which affects demand for services); and overall prevalence of chronic illness. The combined effect of 3 of the primary drivers of demand—growth of the overall population, aging of the population, and increased prevalence of chronic illnesses—is expected to increase demand for services in North Carolina (measured in annual visits) considerably. The first two factors alone will lead to a 52% increase in annual visits between 2005 and 2030. The increasing prevalence of chronic disease may add an additional increase of 5%.

The NC IOM Task Force on Primary Care and Specialty Supply developed different workforce projections based on different assumptions, including a “best case” and “worst case” scenario. (See Table 1.) The “best case” scenarios are based on

Table 1.
Projected Change in Practitioner-to-Population Ratios, North Carolina, 2020 and 2030

	Projected Change in Practitioner-to-Population Ratios		Projected Change in Practitioner-to-Adjusted Population Ratios	
	2020	2030	2020	2030
Physicians only	-8%	-21%	-12%	-26%
All practitioners				
Best case	4%	-2%	-1%	-8%
Worst case	-4%	-13%	-8%	-19%

Source: NC Institute of Medicine and the North Carolina Health Professions Data System.

current growth of physicians and the higher than average rate of growth of PAs, NPs, and CNMs experienced in the last 5 years. These projections weigh PAs, NPs, and CNMs at 0.75 full-time equivalent (FTE) of a physician.⁶ The “worst case” scenarios are based on current growth of physicians and average rate of growth of PAs, NPs, and CNMs averaged over the last 25 years. These projections weigh PAs, NPs, and CNMs at 0.50 FTE of a physician (as used by federal workforce projections). In addition, there are separate estimates for practitioner-to-population only and practitioner-to-adjusted population (based on increased demand due to aging of the population). These projections do not factor in growth in the number of people with chronic illnesses because current projections for disease prevalence and its effect on ambulatory services are too tenuous. By 2030, under almost any realistic scenario, North Carolina is likely to experience significant practitioner shortages absent any changes in supply or productivity.

Chart 1 presents the best and worst case projections for the age-adjusted populations between 2005 and 2030. The supply of practitioners-to-population is expected to increase until 2015, at which time North Carolina will see a precipitous drop in the overall supply of practitioners.

There are two fundamentally different approaches the state can take to address future practitioner shortages: (1) restructure

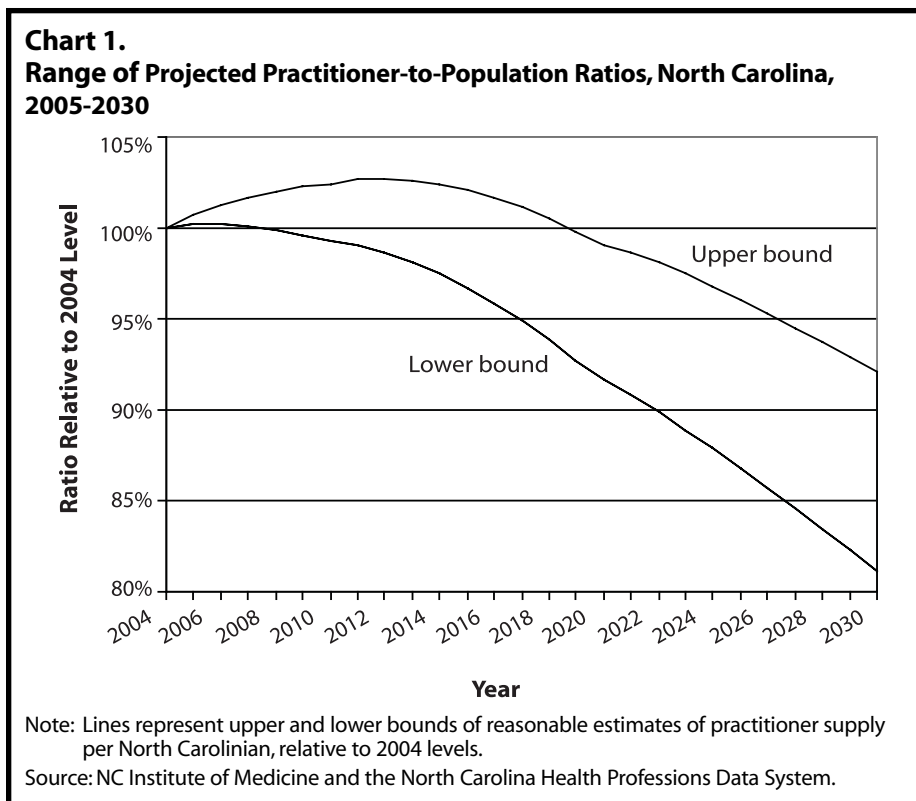
the health care delivery and finance system to create new and more efficient systems of care (particularly for people with chronic illnesses) or (2) increase practitioner supply.

The state should explore ways to restructure the health care delivery and financing systems to increase quality and efficiency so that practitioners, practices, and health care systems can appropriately manage a higher caseload. Theoretically, this goal could be accomplished through expanded use of PAs, NPs, and CNMs or interdisciplinary teams of practitioners. Lloyd Michener discusses these new models of care in his commentary of this journal issue. Another trend which may increase the number of patients that practitioners can see in an ambulatory setting is use of hospitalists. Hospitalists free up community practitioners’ time by assuming care of patients once they are admitted to hospitals. While these options are conceptually attractive, few large-scale system redesigns have led to major increases in productivity. Yet these models are worth further study. **Thus, one of the task force’s priority recommendations was that North Carolina foundations fund and evaluate new models of care to improve quality and efficiency of existing practices. If effective, insurers and other payors should reimburse practitioners to support these models.**

Absent new models of care or improvements in the underlying health status of the state’s population, North Carolina is likely

to need a significant increase in the number of practitioners practicing in the state. The state must either increase the number of practitioners entering practice, decrease attrition, or both. (See Figure 1.) There are short-term and long-term strategies to address the practitioner shortage. Over the short term, the state can try to recruit more practitioners from other states to practice in North Carolina. However, as Tom Ricketts describes in his commentary, most other states also will be experiencing a physician shortage.^{b,7} As a result, there will be increased competition in recruiting the limited number of physicians.

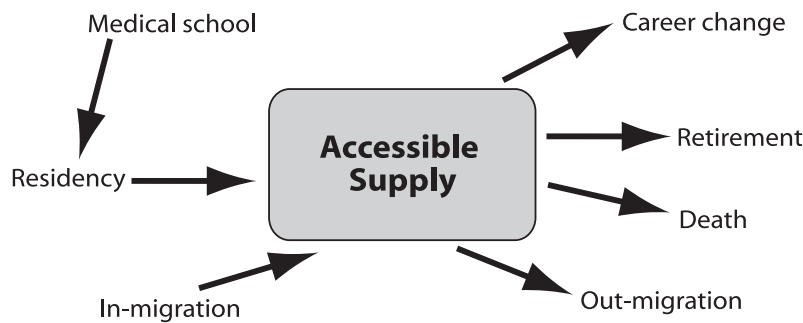
Over the long term, there is a need to educate and train more physicians by increasing undergraduate medical education and residency positions.^{c,8} **The task force recommended that North Carolina increase the number of physicians trained in North**



b The following states have issued reports highlighting physician workforce shortages: Texas (2002), California (2004), Mississippi (2004), Wisconsin (2004), Arizona (2005), Georgia (2005), Kentucky (2005), Massachusetts (2005), Michigan (2005), and Oregon (2005).

c The Association of American Medical Colleges recently recommended US medical schools increase the number of undergraduate medical students they enroll by 30% in order to meet the need for physicians in the future.

Figure 1.
Factors in Physician Supply



Carolina medical schools either by increasing enrollment on existing campuses, by creating a satellite campus, or by creating a new medical school. James McDeavitt and Kara King discuss the potential to expand the medical school class of UNC-CH through a satellite campus at Carolinas Health Care System in Charlotte, while Gary Bowers, Teck Penland, and Joseph Damore discuss the potential for creating a medical school expansion in Western North Carolina. Nevertheless, it is not sufficient to train new physicians if these physicians ultimately choose to practice in another state. Over the last 40 years, only 40% of students trained in North Carolina medical schools ended up practicing in-state.⁹ Those who complete their training in a publicly-funded medical school with a mission to serve the state are more likely to practice in-state. (See Table 2.)

The task force also recommended that North Carolina medical schools expand enrollment and the priority recommendation suggested that state funding be targeted to medical schools that produce North Carolina physicians that fill the unmet health needs of the state's population. The task force also recommended the state expand the number of residency positions. Almost half (49%) of physicians who

of primary care, general surgery, psychiatry, and other types of specialties experiencing shortages as well as to support programs designed to graduate physicians likely to settle in rural or other underserved areas of the state.

North Carolina also needs to train more PAs, NPs, and CNMs to meet the state's health care needs. Justine Strand, Nancy Short, and Elizabeth Korb discuss the important role of PAs, NPs, and CNMs in meeting the health care needs of the state's population. Expanding the number of PAs, NPs, and CNMs is a less expensive option and yields more immediate results than increasing the number of physicians. Unlike medical schools, which typically require 4 years of training and 3-year, postgraduate residency programs, NPs, PAs, and CNMs can complete their education and training within 2 to 3 years after completing their undergraduate degrees. In North Carolina, the PA, NP, and CNM schools collectively graduate approximately the same number of practitioners as do the medical schools. Along with increasing medical school enrollment, the task force recommended that North Carolina health professional schools increase enrollment of PAs, NPs, and CNMs, but that state funding be tied to those schools that produce practitioners who meet the health care needs of the state.

Table 2
North Carolina Medical School Enrollment and Graduates Practicing in the State

School	2004-2005 Academic Year			
	Total Enrollment	New Entering Students	% New Students In-State	% Graduates Practicing in NC*
Brody School of Medicine, East Carolina University	290	72	100%	59%
Duke University School of Medicine	467	101	20%	24%
University of North Carolina School of Medicine	649	160	85%	49%
Wake Forest University School of Medicine	427	108	40%	39%

Source: American Medical Association. Medical schools in the United States. *JAMA*. Medical Education Issue. September 7, 2005;294(9):1119-1127; NC Health Professions Data System. September 2006.

There are many challenges to creating new schools or expanding existing schools including the costs of expansion, limited classroom space or lab space in existing schools, and limited faculty (depending on the type of program). Lack of clinical training sites is a challenge for existing programs and would be exacerbated if new programs were created or existing programs expanded. As Tom Bacon discusses in his commentary, there are challenges to creating new clinical training sites.

Further, clinical training sites often impact where health professional students choose to practice. Thus, there have been attempts to move clinical rotations out of academic health centers and hospitals and into communities, particularly underserved communities, in an effort to enhance clinical training and to encourage practitioners to set up practice in those locations. **The task force recommended that the General Assembly provide additional funding to the North Carolina Area Health Education Centers Program to support the development of additional clinical training sites necessary for the training of additional health professional students.**

The task force also recommended other options to increase overall practitioner supply including expanded marketing efforts to recruit out-of-state practitioners to North Carolina, maintaining and/or improving the practice environment for health care practitioners, and expanding the supply of trained practice managers to help physicians and other health professionals maintain financially viable practices. To continue examinations of impending practitioner shortages and develop workable strategies to expand the health professional workforce, **the task force recommended that the General Assembly appropriate funding to support and expand the current Health Professions Data System, housed within the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill, and create an ongoing Health Workforce Policy Board.**

Maldistribution

North Carolina's practitioner-to-population ratio is similar to the rest of the country; the ratio of physicians per 10 000 population in North Carolina reached 20.7 in 2005. This ratio is lower than the US average of 22.77 per 10 000 but is consistent with ratios for states that border North Carolina.¹⁰ However, this statewide average masks some stark differences in practitioner supply. Some areas of North Carolina have an abundance of health professionals while others lack sufficient practitioners, forcing individuals to travel long distances for health care. Shortages typically exist in rural areas, but there also are pockets of low practitioner supply in low-income areas of larger cities.

The Bureau of Health Professions in the US Department of Health and Human Services has designated certain communities, population groups, or medical facilities as health professional shortage areas (HPSAs).¹¹ Certain counties, or parts thereof, are considered primary care HPSAs if they have more than 3500 people per primary care practitioner.^d In 2005, 11 whole counties and parts of 40 additional counties in North Carolina were designated as HPSAs.

Some counties change their HPSA designation from one year to the next depending on growth in the population and whether the county gained or lost a physician. However, other counties are persistently considered HPSAs. The task force focused on areas of the state designated as HPSAs in 6 of the last 7 years or as "persistent health professional shortage areas" (PHPSAs). Eleven counties in North Carolina are considered whole-county PHPSAs and 27 counties are part-county or special population PHPSAs. (See Map 1.) In the last 5 years, more than half (55%) of the 38 PHPSAs experienced a decline in their primary care practitioner-to-population ratios. Whole-county PHPSAs are more likely to be rural and to be located in eastern North Carolina than non-PHPSAs and have a higher percent of the population living below the poverty line (15.2% for whole, 10.4% for non-PHPSAs).¹²

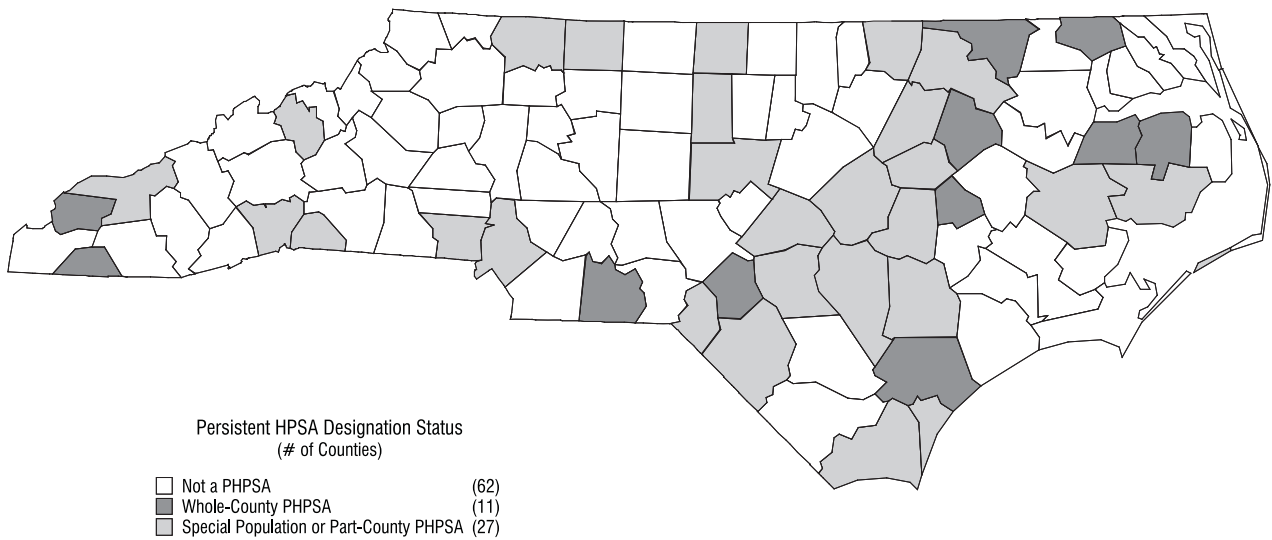
Populations with lower physician supply may be less able to address their health care needs in a timely manner. Not only does lack of practitioners have an impact on access to health services, it also can have an adverse impact on the economic health of a community. In his commentary, Aaron McKethan discusses the importance of having a stable health professional workforce when recruiting industries into rural areas. The current and future health professional shortage has implications that go beyond the specific health care needs of individuals.

Historically, North Carolina's Office of Rural Health was considered a national leader in recruiting physicians and other practitioners into rural areas.¹³ Torlen Wade, director of the North Carolina Office of Rural Health and Community Care (ORHCC), Maggie Sauer, director of the North Carolina Community Practitioner Program, and Christine Kushner discuss the state's past experience recruiting practitioners into rural and medically underserved areas of the state. North Carolina made significant headway in addressing practitioner maldistribution problems in the 1980s and 1990s; however, improvements have stagnated, and now maldistribution problems appear to be getting worse.

Practitioners choose their location of practice based on a number of factors including economic potential, lifestyle, family preference, and training location. Provider practices must be financially sustainable, which is a challenge in rural areas that lack population density and in low-income communities where a higher proportion of people lack health insurance. Financial incentives and practice support (eg, information technologies) will increase the financial viability of practices treating historically underserved areas and populations. **To address these maldistribution problems, the task force recommended that the General Assembly appropriate additional funding to ORHCC to recruit practitioners and provide them with loan repayment or other financial**

d Areas that are designated as HPSAs must define and justify a rational service area for the delivery of health services (often a county), have a sufficiently low practitioner-to-population ratio, and show evidence that nearby resources are overutilized, too distant, or otherwise inaccessible. For primary care professionals, areas with more than 3500 people per primary care provider can qualify as HPSAs, although the standard is lower for certain "high need" areas. An area is designated as "high need" if the area has more than 100 births per year per 1000 women aged 15-44, has more than 20 infant deaths per 1000 live births, or has more than 20% of the population (or of all households) with incomes below the poverty level.

Map 1
Persistent Health Professional Shortage Areas* (PHPSAs) in North Carolina, 2005



Source: Area Resource File, HRSA, DHHS, 2005; Bureau of Health Professions, Shortage Designation Branch, 2005.

Persistent HPSAs are those designated as HPSA by the Health Resources and Services Administration (HRSA) from 1999 to 2005 or in 6 of the last 7 releases of HPSA definition.

incentives to encourage them to establish practice in underserved areas of the state. In addition, the task force recommended that North Carolina foundations fund regional, multi-county demonstrations to test new models of care to serve patients in rural and urban underserved areas.

Primary Care and Specialty Shortages

Examining overall supply of physicians, PAs, NPs, and CNMs can mask shortages in particular specialty areas and overlook the importance of having an appropriate mix of practitioners. The task force was unable to examine every medical specialty. Instead, the task force focused on the supply of primary care practitioners, practitioners who deliver babies, general surgeons, and psychiatrists. As Erin Fraher, director of the North Carolina Health Professions Data System, discusses in her commentary, North Carolina currently has an adequate supply of most practitioner types when compared to national or regional averages. However, practitioner types are not well distributed throughout the state, and North Carolina is likely to experience severe shortages among many of these practitioner types in the future.

Primary care: Primary care practitioners (PCPs) serve as the entry point into the health care system for most patients.^e They provide preventive, primary, and acute medical services that can address most of a person's health care needs.¹⁴ Recent evidence suggests fewer practitioners, including allopathic trained physicians,

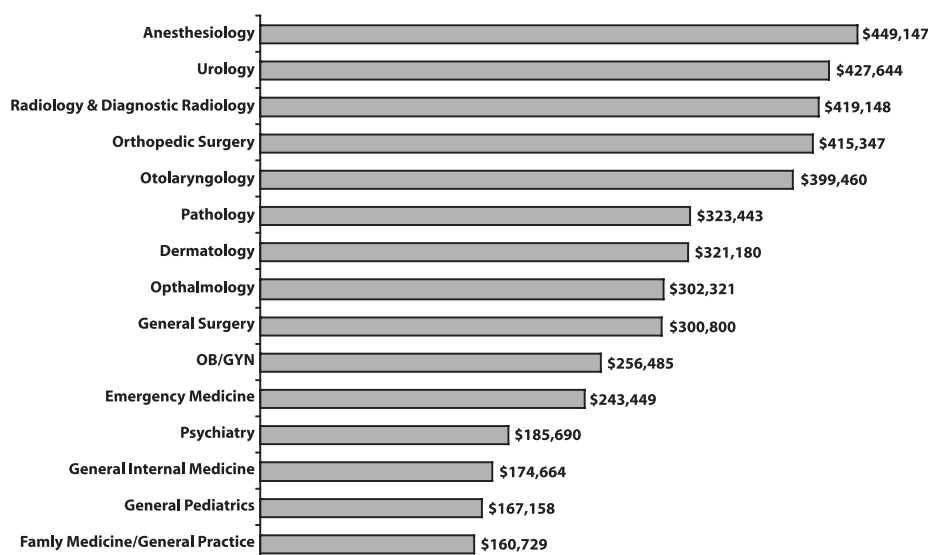
PAs, and NPs, are going into primary care than in the past. For example, between 1997 and 2005, the number of medical student graduates choosing primary care residencies dropped 50%.¹⁵ Instead, students are moving into specialty areas. PAs and NPs also are less likely to practice primary care today than 4 years ago.¹⁶ As noted in the maldistribution section, primary care practitioners are not well distributed throughout the state.

One reason for declining interest in primary care is that primary care practitioners experience increased demands with lower overall reimbursement. The number of and need for recommended preventive and chronic care treatment services has increased to the point that it is impossible for physicians to provide all recommended care to their patient mix in a regular workday.¹⁵ Although the scope of care has increased, primary care practitioner reimbursement has decreased in inflation-adjusted dollars. Between 1995 and 2003, inflation-adjusted salaries decreased 7.1% for all physicians but 10.2% for primary care physicians.¹⁷ Primary care practitioners are paid less for their services than are specialists. Insurers generally pay more for procedures and less for cognitive and diagnostic skills, which make up a greater proportion of the clinical work of primary care practitioners. (See Chart 2.)

Primary care is very important for preventing disease, increasing quality of care, and reducing costs. Barbara Starfield and Leiyu Shi discuss the influence of primary care practitioner supply on community health. Evidence indicates that unnecessary hospitalization rates are higher in communities with limited

e PCPs include PAs, NPs, CNMs, and doctors both of allopathic medicine (MD) and osteopathic medicine (DOs) who are family practitioners, general practitioners, internists, pediatricians, or obstetrician/gynecologists.

Chart 2.
Median Physician Salary by Specialty, 2006



Source: Cohen J. Presented at: North Carolina Institute of Medicine Primary Care and Specialty Summit; December 21, 2006; Raleigh, NC. Citing MGMA Physician Compensation and Production Survey 2001-2006

access to primary care practitioners. Studies also show quality of care is higher and expenditures are lower in states with higher generalist-to-population ratios compared to those with higher specialist-to-population ratios.¹⁵ **To encourage more practitioners to become primary care practitioners, the task force recommended that public and private insurers enhance payments to primary care practitioners to recognize the value of their diagnostic and cognitive skills. Specifically, primary care practitioners should be provided financial incentives to create a primary care home where patients can obtain preventive health services, chronic disease management, and case management.**

Practitioners who deliver babies: Ensuring women have continuous and early prenatal care is critical to the well-being of the infant and mother. Women need access to physicians and other clinicians who are trained to deliver babies and who can address any complications that might arise during delivery. North Carolina appears to have an adequate number of practitioners who offer prenatal care and delivery statewide, but the statewide average masks significant practitioner shortages in certain parts of the state. Currently 13 counties in the state have no physicians reporting a practice location that provides prenatal care services. Eight of these counties have no practitioners (physician, PA, NP, or CNM) who report providing prenatal care on their licensure files. Community members in these counties have access to some prenatal care through their local health departments, but delivery services are not available in these counties. Even in counties with prenatal practitioners, there is wide variation in the ratio of practitioners to women of childbearing age.

There is even more of a maldistribution problem of physicians who deliver babies. In 2004, there were 19 counties without physicians who reported delivering babies; 12 of these counties

had not had a physician deliver a baby in the prior 5 years. More than one half of all North Carolina counties had either a decline in the ratio of physicians delivering babies to women of childbearing years between 2000 and 2004 (40 counties) or no physicians providing deliveries in either 2000 and 2004 (12 counties). **To address the shortage of practitioners delivering babies in underserved areas, the task force recommended that the General Assembly appropriate funding to help subsidize the malpractice premiums for physicians and CNMs who provide delivery services in medically underserved areas of the state.**

General surgeons: North Carolina currently has more general surgeons per 10000 population (0.75) than the nation as a whole (0.60) or the south (0.64). However, trends indicate fewer medical graduates are choosing to practice in general surgery. For most entering surgeons, progressive specialization is narrowing their scope of practice. In addition, supply of general surgeons varies drastically across the state. In 2005, North Carolina had 22 counties with no surgeons while another 35 counties had below the state average of 0.62 general surgeons to 10 000 population. The majority of the counties with no surgeons or fewer than 0.62 surgeons per 10 000 population are found in the eastern and western parts of the state. As Larry Chewning and Jeff Spade discuss in their commentary, general surgeons are critical to the viability of small rural hospitals. **The task force recommended that medical schools be incentivized to produce the type of physicians (eg, physicians who deliver babies, general surgeons) needed to meet the state's health care needs. In addition, special consideration should be given to funding a track in an existing residency program that focuses on training general surgeons for rural practice. The task force also recommended that some of the funding to the ORHCC be used to provide incentives to general surgeons who practice in underserved areas.**

Psychiatrists: Nationally, almost one third of nonelderly adults and a sizeable number of children experience a mental disorder in any given year.¹⁸ Many types of health professionals treat mental health disorders including, but not limited to, psychiatrists, psychologists, primary care practitioners, social workers, and clinical nurse specialists. While these practitioners are all trained to provide psychotherapy, some people need further consultations and treatment by psychiatrists or other physicians who can prescribe medication therapy. Aside from primary care

practitioners, psychiatrists are among the lowest paid of physician specialties (Chart 2) which may discourage some physicians from choosing to specialize in this field.

As with other types of health care professionals, the statewide ratio of psychiatrists-to-population masks severe maldistribution problems. In 2004, there were 17 counties with no psychiatrists and another 27 counties with ratios low enough (0.33 or below) to be designated as mental health HPSAs.¹⁹ Psychiatrists are most densely located close to the state's 4 mental health hospitals, in counties with major medical centers, and in large metropolitan areas. In general, psychiatrists are less likely than all other physicians to locate in rural areas or in HPSAs.

North Carolina's mental health reform has also impacted the provision of care to mental health patients in the public sector. Mental health services in North Carolina are coordinated by local management entities (LMEs). Between 2003 and 2005, the number of LME psychiatrists per capita fell 16%. Per capita losses were higher in rural areas (20%) compared to urban areas (14%). Small-population LMEs experienced an even larger decrease (44%) in the number of psychiatrists per capita.²⁰ In the absence of psychiatrists, primary care practitioners often are faced with the responsibility of diagnosing and managing the care of people with mental illness. However, 7 of the 17 counties with no psychiatrists are also whole-county primary care HPSAs.

To address the shortage of psychiatrists, the task force recommended that the General Assembly and North Carolina Division of Mental Health, Developmental Disabilities and Substance Abuse Services provide funding to establish new models of care to serve public patients in rural and underserved areas. In addition, public and private insurers should reimburse psychiatrists to consult with primary care practitioners and other clinicians through face-to-face consultations or telemedicine. John Frank, Director of the Kate B. Reynolds Charitable Trust, discusses one such model, ICare, in the Philanthropy Profile of this journal issue.

Underrepresentation of Minorities in Health Professions

Minority populations comprise 30% of North Carolina's population, but they account for only 15% of physicians, 12% of PAs, and 10% of NPs in the state.²¹ African Americans, American Indians, and Hispanics are particularly underrepresented in health professions. (See Chart 3.)

When given the option, people are more likely to choose a practitioner that has a similar racial and ethnic background.²² Concordance of practitioner and patient race or ethnicity might be particularly important for members of minority populations who, because of real and perceived past discriminatory treatment,

have lower levels of trust in practitioners of other racial groups.²³

Underrepresented minority practitioners also are more likely to practice in underserved areas than are white practitioners.^f Similarly, health care practitioners from underrepresented minority ethnic and racial groups are more likely to serve patients of their own ethnicity or race and patients with poor health.^{24,25,26} This practice is very important because African Americans, American Indians, and Hispanics are more likely to lack health insurance, suffer from certain chronic health conditions, and report access barriers to health care.²⁷

In order to increase the supply of underrepresented minorities in the professions, the task force recommended that North Carolina medical and health professional schools develop new strategies to increase the number of racial and ethnic minorities admitted and trained in North Carolina. For example, the state could expand minority scholarship programs or develop new or satellite health professional schools in historically minority public or private colleges or universities. Schools could modify their admission policies to facilitate the enrollment of minority applicants or hire faculty and chairs who are members of underrepresented minorities in order to reduce the professional isolation of minority health professional students. **The task force also recommended that the state evaluate existing minority health professional pipeline programs and tie future state funding to the programs that are most effective in increasing underrepresented minorities in the health professions.**

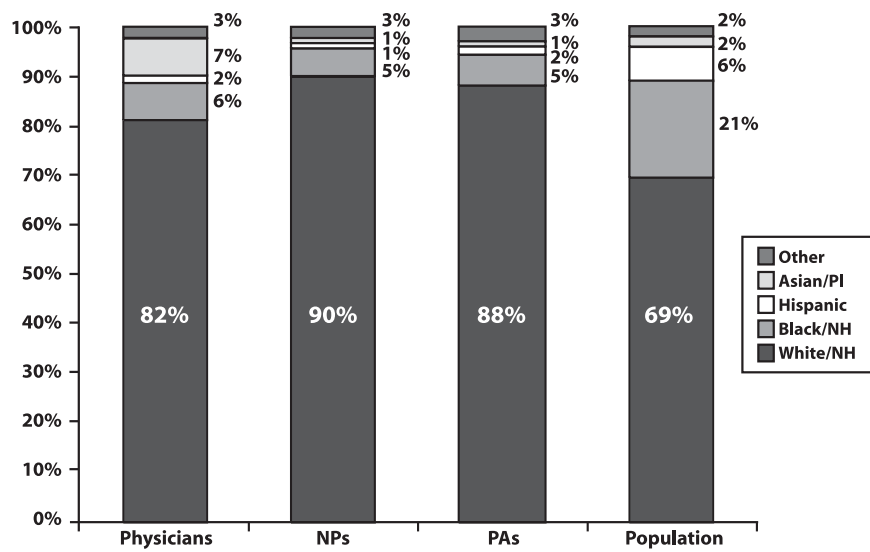
More bilingual and bicultural practitioners are needed to reduce language and cultural barriers to health care services. In North Carolina, there are approximately 150 000 Spanish-speaking residents who do not speak English well or do not speak English at all.²⁸ Studies show people with limited English proficiency are more likely to report being in fair or poor health and are more likely to defer needed medical care, miss follow-up appointments, and experience drug complications.^{29,30} Bilingual and bicultural practitioners can help address language and cultural barriers for the growing Latino and immigrant populations. **The task force recommended that medical and health professional schools recruit and admit more bilingual and bicultural students into their programs and encourage others to take Spanish medical language courses as part of their training.**

Conclusion

Access to health care practitioners including physicians, PAs, NPs, and CNMs is very important to the health of individuals and populations. However, North Carolina is likely to face challenges meeting the population's demands for care over the next 25 years. Although the potential shortfall is considerable, the state has a number of policies that could be used to reduce

f Underrepresented minority practitioners are 3 times more likely than white practitioners to serve in whole-county PHPSAs (12% for minority practitioners compared to 4% for white practitioners) and are more likely to serve in part-county PHSPAs (42% for minorities and 34% for whites).

Chart 3.
Race of Population and Practitioners, North Carolina, 2004



Source: NC Health Professions Data System and US Census.

existing practitioners to remain in practice in North Carolina. In short, many of the policy options are interdependent. Success requires adoption of many complementary strategies.

North Carolina need not implement all the practitioner supply strategies in order to maintain the current practitioner-to-population ratio. For example, the state does not need to increase the number of physicians, PAs, NPs, and CNMs each by 30% in order to maintain current ratios. To some extent, these recommendations are alternate strategies that depend, in part, on when the strategies are implemented. If implemented *today*, the state could maintain its current ratio over the next 25 years by:

this deficit. The state should identify options to improve the quality and productivity of existing practices so that health professionals can provide high-quality health services to more North Carolinians. The state should concurrently examine options to develop new models of care that would reduce the need for health care practitioners and/or expand the supply of physicians, PAs, NPs, and CNMs. North Carolina needs to engage in multiple strategies, simultaneously, to increase the balance of supply with needs. If new medical school slots are created without new residency slots, then in-state retention of the expanded number of medical school graduates will not be realized because many will need to leave the state for residency and are not likely to return. Similarly, initiatives to increase awareness of health careers among rural and minority middle and high school students will have little impact without also expanding available enrichment programs to help students overcome the hurdles to being accepted into medical school. North Carolina also should explore ways to recruit physicians and other practitioners into North Carolina and to encourage

1. Increasing yearly educational production of physicians by 20%, *or*
2. Increasing production of PAs, NPs, and CNMs by over 30%, *or*
3. Increasing in-migration to produce a net increase of physicians by 15%, *or*
4. Increasing capacity of the health system to manage effectively the health of more North Carolinians or improve the health of North Carolinians to reduce the need for health services by 15%.

The time to act is now. The longer the state waits to implement the recommended strategies, the greater the number of practitioners it will need to produce on a yearly basis to address anticipated practitioner shortages. The state must take the necessary steps to ensure we have the right mix of practitioners in the right locations to meet current as well as future health care needs. **NCMJ**

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