

# Improving the Return on Investment of Graduate Medical Education in North Carolina

Warren Newton, Noah Wouk, Julie C. Spero

**The National Academy of Medicine has called for fundamental reform in the governance and accountability of graduate medical education, but how to implement this change is unclear. We describe the North Carolina graduate medical education system, and we propose tracking outcomes and aligning residency stipends with outcomes such as specialty choice, practice in North Carolina, and acceptance of new Medicaid and Medicare patients.**

*It is clear that so long as a man is to practise [sic] medicine, the public is equally concerned in his right preparation for that profession.*

Abraham Flexner [1]

**T**his article outlines a proposed change in how the North Carolina Area Health Education Centers (AHECs) support graduate medical education (GME). GME is an issue of national as well as statewide importance because it plays a decisive role in determining the quality, size, specialty mix, and geographic distribution of our physician workforce. Because public programs (Medicare and Medicaid) are the largest single source of GME funding [2], GME should be considered a public good that merits public scrutiny.

At the national level, the National Academy of Medicine (NAM) has called for major reform of GME governance and funding [3]. Federal GME reform is expected to take a long time; in the meantime, many states are moving forward with GME reform at the state level. We describe the current state of GME in North Carolina and what is known about GME outcomes, and we conclude with a proposal to track and report the outcomes of North Carolina GME programs and to distribute AHEC residency stipends based on these data.

## North Carolina's Current GME System

North Carolina has more than 3,000 graduate medical learners training at 10 different institutions (see Figure 1) [4, 5]. Our public expenditures are thus significant. In 2012, North Carolina directed \$115.7 million state Medicaid dollars to GME [6]; when coupled with the almost \$300 million in Medicare GME funds the state received and additional support from the Veterans Administration system and the Department of Defense, North Carolina has almost \$400 million in yearly public spending on GME. In addition

to public funds, the major teaching hospitals fund many residency slots themselves.

Across the country, state contributions to Medicaid GME funding are increasingly under scrutiny, and many states are exploring how they could target Medicaid GME funding to better support the workforce that Medicaid patients need. In North Carolina, the legislature reduced the state contribution to Medicaid GME funding during the 2015 session and requested a formal recommendation about Medicaid GME strategy by March 1, 2016 [7].

Discussion at the national level has highlighted multiple concerns about the current GME system. A recent report from NAM calls for a major overhaul of GME governance and financing [8], underscoring the need to improve social accountability, update the system to reflect changes in medicine since 1964, and reduce the stunning variations in funding from state to state and from hospital to hospital. Advisory groups have registered similar concerns for a decade [8-12].

With limited exceptions, government funding for GME has not been linked to training of physicians who choose to practice in needed specialties or underserved geographic regions. Instead, spending of GME funds is largely left to the discretion of teaching hospitals. As a result, the current GME system has failed to produce the optimal specialty mix of physicians. In particular, there is substantial need for primary care physicians, general surgeons, and psychiatrists who will practice in rural and underserved communities [13]. Moreover, the mix of available physicians is itself a key driver of cost and quality outcomes.

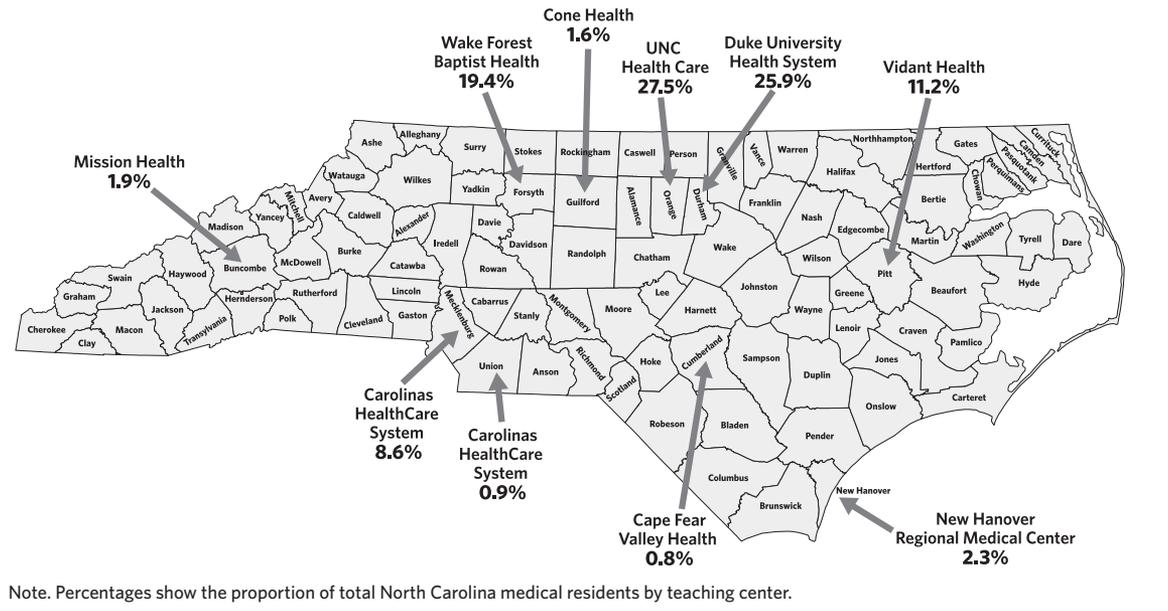
Of course, numerous factors influence the specialty choices that young men and women make, including age, debt load, prior work experience, income differential across specialties, lifestyle preferences, and available jobs and opportunities. The GME system substantially influences both the physician workforce that is created and where these physicians practice. In North Carolina, the need for a

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**FIGURE 1.**  
**Graduate Medical Education in North Carolina**



different mix and geographic distribution of the physician workforce will only increase as Medicaid reform begins, pay-for-value models spread, and the focus shifts to improving the health of populations and moving care from hospitals into communities.

As a cost-saving measure, Congress instituted a cap on funding of new GME programs in 1997. With limited exceptions, hospitals with existing residency programs that wish to expand residency positions or add new specialties have been obligated to self-fund these positions or seek alternate sources of sponsorship. The result has been disproportionate growth between specialties—faster growth in specialties for which hospitals are well remunerated and slower growth in primary care and other specialties that do not generate as much direct margin. The shift has been dramatic. In a 5-year period following the implementation of the 1997 Balanced Budget Amendment, specialty training programs outgrew their primary care counterparts by a factor of almost 5 to 1 [14]. Between 2004 and 2013, growth in subspecialty GME positions increased by 40%, compared with a 13% increase in pipeline specialty programs (leading to initial board certification) [15]. If analyses take into account the reduction of existing primary care programs, an even greater tilt towards specialty and subspecialty training is apparent [16].

### What Does North Carolina Need?

In comparison with other states, the health status of North Carolinians has improved substantially over the past 50 years. In the middle of World War II, 56.7% of North Carolina draftees were medically unfit for service; this proportion was the highest of any state in the country [17]. This finding led to the Poe Commission, the “Good Health Campaign” in the late 1940s, and broad consensus on the

need for more investment in both health care and health professional education. Since then, the health status of North Carolinians has improved substantially; in 2014, the United Health Foundation ranked North Carolina 37th across a large number of objective health indices [18]. Of course, many factors have contributed to this improvement; North Carolina’s population has grown to 9th in the nation, and the state has become a major center for pharmaceuticals, information technology, and banking. In addition, the growth and development of our teaching centers, major regional hospitals, GME and other health professional educational systems, and pioneering AHEC and Office of Rural Health programs have played significant roles. However, much work remains. North Carolina is below average on most objective indicators of population health, with huge disparities in outcomes by race, geography, and disease prevalence. If North Carolina were its own country, its life expectancy would rank 44th, below many Eastern European and Central American countries [19, 20].

What are the outcomes of our state’s current GME strategy? The North Carolina Institute of Medicine reviewed health professional specialty mix in 2007 and concluded that North Carolina needs significantly more primary care doctors, general surgeons, and psychiatrists working in rural and community settings [13]. Almost a decade later, with the dramatic shifts in direction caused by health care reform, these recommendations remain appropriate. In terms of overall physician supply, North Carolina’s physician-to-population ratio ranks 28th in the nation [21], with growth in primary care keeping pace (or possibly exceeding) overall physician growth [5]. While growth in primary care has remained steady, North Carolina residency programs produce fewer generalists than do most other states; in a

50-state analysis of generalist physician production conducted in 2011, North Carolina ranked 43rd [20]. Further, North Carolina retains only 42% of its medical residents, which is well below the national average (see Figure 2).

There are also striking geographic disparities across the state. In 2013, 22% of the state's population lived in rural areas, but only 14% of North Carolina's physicians practiced in rural counties [22, 23]. The net result is that, in our most underserved areas (those designated as persistent whole-county health professional shortage areas), the ratio of primary care physicians to population is roughly one-third that of non-shortage areas [24].

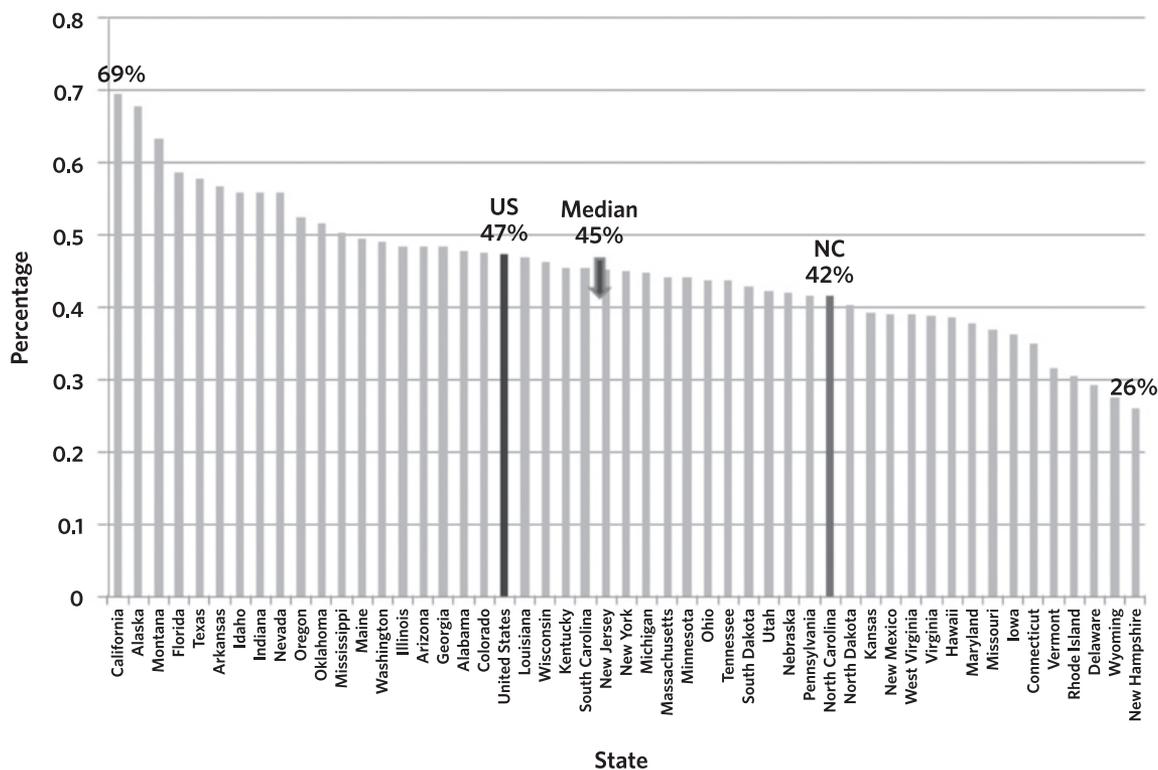
The state's 16 AHEC residencies have played a significant role in training physicians who stay in North Carolina. As depicted in Figure 3, AHEC residency graduates are more likely than are their non-AHEC counterparts to remain in primary care in North Carolina (50% versus 38%) and to enter rural practice (15% versus 12%) [22, 25]. AHEC primary care graduates are retained in North Carolina in even higher numbers (57% versus 42%). This means that, despite the relatively small numbers of AHEC residents (16% of all resident physicians in the 2013-2014 academic year), AHEC plays an outsized role in nourishing North Carolina's primary care physician workforce [25], and more than half of the physicians who complete an AHEC residency in primary care remain in state to practice.

## The Role of AHEC in the Future

A major mission of AHEC is to support the pipeline of physicians and other health professionals. As depicted in Figure 4, this pipeline starts in middle school and high school, and it continues through loan repayment and practice support after formal training ends. Thus, a key strategic question for AHEC is where in the physician pipeline to focus our efforts. By law, AHEC currently tracks and reports the 5-year outcomes of the state's medical schools to assess the production of practicing primary care providers. For the class of 2009, only 14% of North Carolina's medical school graduates ended up practicing in primary care, and only 1% practiced in rural primary care (see Figure 5). Expanding medical schools alone is unlikely to dramatically increase North Carolina's production of physicians in needed specialties and geographic regions. Instead, policy makers and stakeholders need to think more broadly about how to influence physician specialty choice and location of practice. At this time, residency training is a critical place to intervene to adjust the specialty mix and retention of physicians in communities, especially rural ones, in North Carolina.

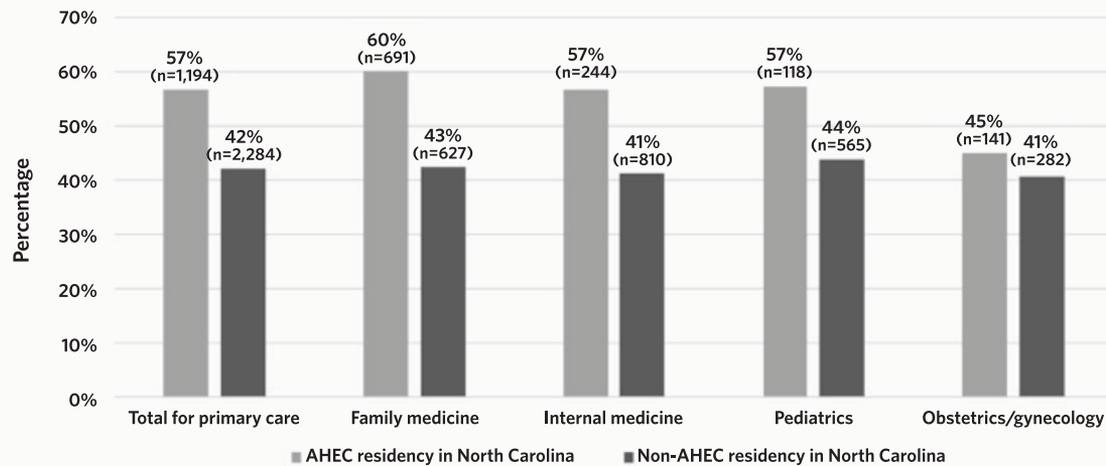
AHEC can start by systematically collecting and reporting the outcomes of North Carolina's residency training programs, with an emphasis on the following outcomes: selection of needed specialties in rural areas, including

**FIGURE 2.**  
Percentage of Physicians Retained in Each State



Note. NC, North Carolina; US, United States.

**FIGURE 3.**  
Retention Rates of Primary Care Physicians Practicing in North Carolina, by Specialty



Note. AHEC, Area Health Education Center.  
Source: Data are from the North Carolina Health Professions Data System, 2013.

primary care (family medicine, general pediatrics, general internal medicine), general surgery, and psychiatry; physicians' decision to practice in North Carolina, especially in rural and underserved communities; and physicians' acceptance of new Medicare and Medicaid patients. How we operationalize the measurement of these goals is important, and we look forward to collaborating with our partner hospitals and stakeholders to set the final rules.

AHEC will then use these outcomes to adjust its stipends to GME programs on an ongoing basis. In the early 1970s, the legislature funded AHEC to support community-based primary care residencies across the state. These stipends provide key support for the development of primary care and community-based residencies. Last year, there were 213 stipends at \$12,150 each, for a total of \$3,561,165. We will develop a system to annually adjust stipends according to residency outcomes. A first step will be to assign stipends to specific residencies rather than to hospitals or health systems. We will then work with the Cecil G. Sheps Center for Health Services Research, North Carolina's medical schools, the North Carolina Medical Board, and other organizations to determine and publish 3-year rolling averages for each residency.

In proposing this plan, we wish to stress 3 issues. First, compared with the almost \$400 million in public funds that go into GME in North Carolina, AHEC stipends are modest—less than 1% of the total public sector spending. However, in the interest of the citizens of North Carolina, we believe it is necessary to begin focusing on the return on investment of the public dollar, both federal and state.

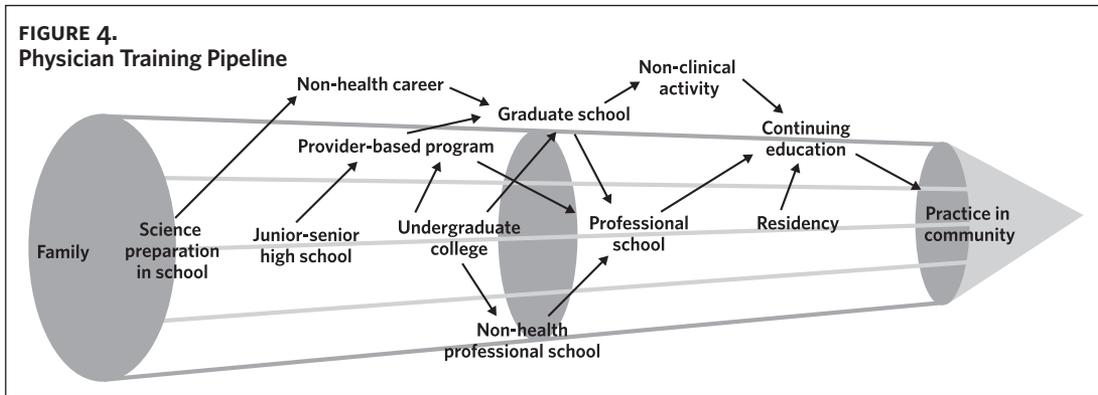
Second, it is difficult to accurately track the outcomes of residency programs. Fortunately, North Carolina has developed a robust system at the Sheps Center for Health Services Research, which can track the health professional

workforce. We believe that, with some investment, North Carolina can be a leader for the rest of the nation, modeling implementation of a statewide system for shaping the GME workforce on the basis of social outcomes.

Third, in response to the concerns of our medical student and resident education colleagues about the challenges of molding the career plans of individuals in their 20s, we note that physicians are uniquely privileged by public support for many aspects of their careers, and there is an analogous concern about considering clinical quality and outcomes for payment of clinical services. The whole health care system is moving toward paying for quality and outcomes. Why not health care education as well?

## Conclusion

AHEC believes that GME has a unique and powerful influence on the future of health care and the communities of North Carolina. Because of this, our GME system needs to become more transparent and responsive to the needs of the communities and the people of the state. We recognize that medical schools and hospitals may feel uneasy for a variety of reasons about reforms that hold medical training programs accountable to the public. Such concerns are hardly new; the American Medical Association initially opposed any Medicare GME financing, characterizing it as "a dangerous device because of the degree of control and regulation which must necessarily accompany federal funds" [26]. Yet, just as health care has evolved, so must GME. The 20th century witnessed dramatic development of medical education. North Carolina played a leadership role in this movement and now boasts numerous well-regarded undergraduate and graduate medical programs. However, future progress is hindered by an inflexible and opaque GME system that is only loosely coupled with the needs of the people and com-



munities of North Carolina.

AHEC will therefore advocate for significant changes in the North Carolina and the national GME systems. A first step is tracking outcomes and providing a modest incentive based on these data. Given the dramatic changes in both the organization of health care and in health professional education, we believe that these measures will likely be only a part of the many changes taking place—not only in health professional education but in health care itself. We look forward to working with our fellow health professionals, our partner hospitals, patients, and other stakeholders to build a new system of health professional education. With regard to concerns from our colleagues about the intrusion of government into education, we believe that Lowell Coggeshall had it right. In 1965, he authored the Association of American Medical Colleges' report, *Planning for Medical Progress Through Education*, which originally established the rationale for the Medicare GME system. In this report he

wrote, "There is, perhaps, no implication of emerging trends that has more profound significance for the field of medical education today than the need to give increasing attention to the growing health requirements of the nation. Positive assumption of responsibility and positive action—and that alone—can keep the initiative in the hands of those best prepared to plan the destiny of medical education" [12].

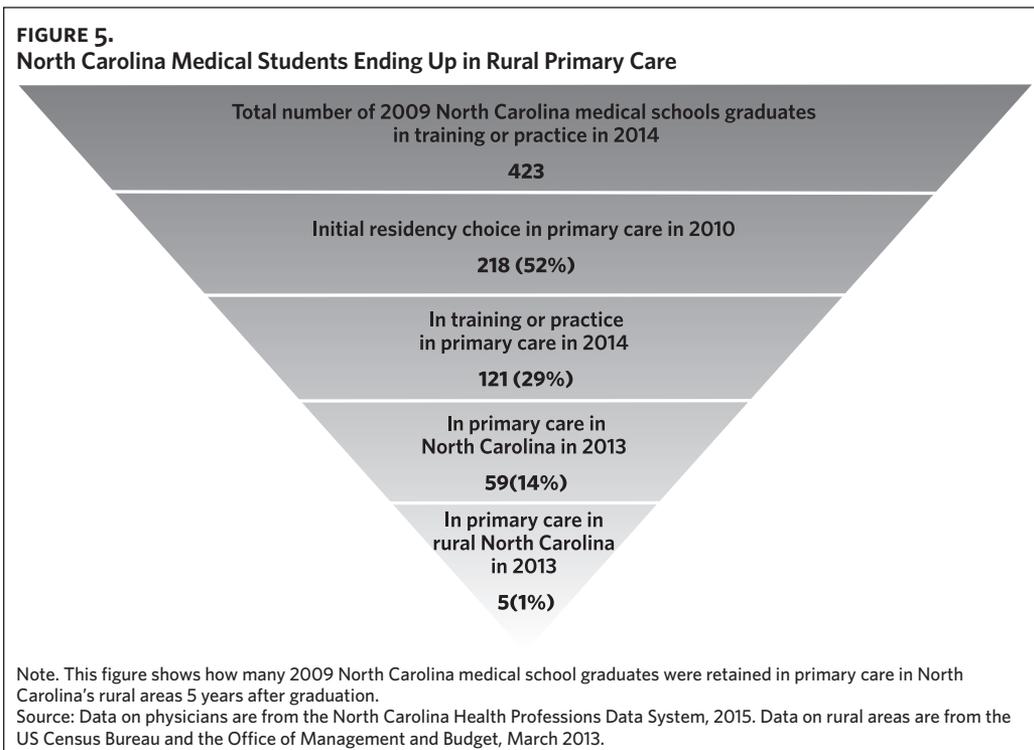
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