Developing the Health Care Workforce of the Future for North Carolina

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Health outcomes in North Carolina are less than optimal. To drive improvement, we must prepare a health care workforce adequate in number, optimally distributed geographically, skilled with forward-looking expertise, and empowered to practice in interprofessional teams at the highest extent of their license. This issue of the North Carolina Medical Journal outlines how North Carolina’s health profession education institutions are working to open new programs and innovate curricula to produce the workforce that our state needs.

According to America’s Health Rankings, North Carolina ranked 33rd among US states in terms of our overall health in 2018 [1]. Our high infant mortality rate of 7.3/1000, ranking 41st in the country, plus our high uninsured rate (10.6%) and number of children living in poverty (21.2%), influence that ranking, as does our strained health care workforce. We have only 51.4 dentists per 100,000 population, placing North Carolina at 37th out of the 50 states, and we have 132.5 primary care physicians per 100,000 population, which ranks the state at 33 [1]. While the causes of poor health outcomes are multifaceted, clearly we must improve our state’s health care workforce.

This issue of the North Carolina Medical Journal reflects on our state’s health workforce, describes new health professions and educational programs that are emerging to serve the evolving needs of the people of our state, and provides examples for effective pipeline initiatives to increase the health care workforce that North Carolina needs.

Workforce Needs in North Carolina

Thanks to the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill, there is very good data about the health care workforce in North Carolina. See https://nchealthworkforce.unc.edu/ for interactive maps regarding numbers, demographics, and geographic locations of clinicians of various types, including trends over time down to the county level. This fascinating dataset demonstrates that over the last two decades the health profession workforce has become more diverse, older, and, in most disciplines, made up of a larger fraction of women. Regarding physicians, 21.9% of North Carolina’s were female in 2000 and in 2017 that percentage reached 34.5%; 71.1% of our physicians were over the age of 65 in 2000 and 11.5% were in that age bracket in 2017 [2]. The story on diversity is more complex. While health professionals are more diverse now than in 2000, the fractional increase in most health professions does not match the rate of increased diversity in our state’s population. For example, 7.7% of physicians were from backgrounds underrepresented in medicine in 2000 and that fraction has increased to 11.2% in 2017, but the population of those race/ethnic groups in North Carolina currently is more than one-third (34.4%) [3].

In 2017, there were 23.8 physicians per 10,000 population statewide, the greatest density of physicians per person demonstrated in the dataset that goes back to 2000 [3]. While this absolute number is reassuring, there are still significant disparities in geographic areas of work, with rural areas persisting with a much leaner workforce.

Physicians are not the only specialty that is increasing in number while still not meeting the complex health needs as our population grows and diversifies. Regarding school nurses, the NC Child Health Report Card from 2018 argues for more nurses in order for North Carolina to meet the Centers for Disease Control and Prevention recommendation of one nurse for every 750 students [4]. Rural areas in North Carolina have less density of school nurses as well [2].

The workforce is diversifying with regard to professions as well. As Spero points out in this issue, there has been rapid growth over the last 17 years in the nurse practitioner (NP) and physician assistant (PA) workforce in North Carolina, outpacing that of physicians [5].

According to North Carolina Community College System (NCCCS) President Peter Hans, the health care workforce needs in our state are substantial and local hospitals are continually asking for more graduates each year [6]. The nursing field in North Carolina is projected to have the second-largest career shortfall by 2025 [7].

With an expanding aging population in North Carolina,
both primary and specialty care providers are limited throughout our state, leading to a decrease in available health care services. According to the Journal of Rural Health, those living in rural areas have poorer health outcomes with not enough resources and higher socioeconomic restraints [7]. Regardless of health profession considered, a relative shortage exists in rural areas of North Carolina.

The geographic maldistribution of the health profession workforce, in addition to behaviors that worsen the health status of our population in all areas, leads to concerning health statistics for our state. Again according to America’s Health Rankings by the United Health Foundation, North Carolina outcomes demonstrate that: in the past three years, drug deaths increased 25% from 13.0 to 16.2 deaths per 100,000 population; in the past five years, obesity increased 8% from 29.6% to 32.1% of adults; and in the past three years, premature death increased 8% from 7,604 to 8,177 years lost before age 75 per 100,000 population [1].

Thus, while the North Carolina health profession workforce is growing, we face dramatic and worsening health needs.

Pipeline Efforts

The need for a larger and better-prepared health care workforce concurrently provides an opportunity for some of our citizens to find meaningful work. As health care delivery is evolving and changing, the possibilities for health professions expand as well. The Bureau of Labor Statistics (BLS) estimates that 2.4 million new health care jobs will be added nationwide between 2016 and 2026 [8]. Effective pipeline programs can expose young people to health profession careers, ensure adequate preparation and expert guidance, and encourage participants to pursue needed careers in underserved areas [9].

It is crucial that health professional education programs work together in pipelining efforts. While health care roles are very common and typically well-compensated opportunities for employment, many young people only consider the most common careers such as doctor and nurse, sometimes because of lack of familiarity with the breadth of other opportunities in health care. It is the responsibility of pipeline programs to expose participants to other options that might best fit their talents and desires [10].

HOSA-Future Health Professionals, formerly known as Health Occupations Students of America, as described by Tyagi in this issue, is an effort to encourage high school students who are passionate about health care to pursue this career pathway [11]. The Hans article notes that almost all North Carolinians are within an estimated 30-minute driving distance of one of the state’s 58 community colleges [6]. The high school workforce pipeline allows for recruiting students into critical roles and pathways for the statewide Career and College Promise (CCP) program. As part of this program, qualified high school students can take community college courses within a career or university pathway tuition free while they are still enrolled in high school [12].

According to Wynne, there continues to be a great need in North Carolina to begin pipeline work early in order to produce diverse and career-ready individuals for the health care arena [13]. In the Tar Heel Footprints in Health Care column, Wurzelmann and Dancy celebrate an individual champion in North Carolina’s health profession pipelining efforts, Dr. Cedric Bright [14].

CaroMont Regional Medical Center has collaborated with Gaston College to develop a health care apprenticeship pipeline for their Nurse Aide I employees to become trained and certified at the Nurse Aide II credential. This unique partnership developed out of the need for more highly trained Nurse Aides due to increased patient acuity and the need for a more skilled workforce according, to Goble’s writing in this issue [15].

Special Needs in Mental Health Care

According to a 2016 report by the National Institute of Mental Health, the fraction of American adults who seek mental health services has steadily increased since 2008, with 13.4% taking part in some sort of treatment and nearly one in five US adults living with a mental illness [16]. To tackle the mental health care needs in our nation, the BLS data indicate that social workers make up the largest sector of mental health providers at around 250,000 professionals holding a social work degree and just over 350,000 licensed social workers in the United States. In addition to social workers, other mental health providers include licensed counselors, psychologists, and psychiatrists [17].

North Carolina’s mental health care needs are great, especially when it comes to the pediatric population. Data from the Sheps Center demonstrate that more than a quarter of North Carolina’s counties do not have a psychologist [18] and recently North Carolina was ranked last of all 50 states in the rate of children with mental health conditions getting the treatment they need [19].

According to the article by Guest, as the mental health workforce across the nation grows the licensed professional counselors (LPCs) in the state of North Carolina will become even more integral to treating patients suffering from mental health conditions [20]. Academic programs for LPCs should be rigorous in nature and focused on adequate clinical preparation in the field of counseling in order to best treat patients with a diagnosed mental health condition. Most states do not have consistent training requirements for counselors nor do they have the ability for licenses to be portable from state to state, all of which are important to strengthen the profession so that it can better prepare this workforce to meet the state’s current and future mental health care needs. North Carolina sets the academic bar very high for this profession by requiring a master’s degree, practicum and internship hours, and a passing score on the national licensure exam before the licensure process can begin [21]. Guest goes on to say that the fragmented education system across the
nation can lead to distrust of this profession as a whole, so it is important for current LPCs to advocate and get involved in policy decisions that impact this vital health care service arena [20].

In addition to training individuals who will focus on mental health treatment, educators need to ensure that all those working in health professions are optimally trained for their discipline to effectively manage mental health concerns. For example, surgeons need to be trained to recognize and name mental health concerns that present in their clinics, and medical assistants need to recognize mental health emergencies and needs for screening. Of course, all primary care providers must be effective at managing common mental health complaints, especially given the shortage of mental health professionals. Some entities have begun to require all their employees to receive training in Mental Health First Aid [22]. Successfully addressing the mental health concerns of our population demands innovation, ownership, and coordination among all our health professions.

Educational Innovations

Not only do we need to attract students into needed health professions, we need to modernize our curricula and programs to be sure we are meeting the need.

Many new health profession training programs have opened in North Carolina recently. A new osteopathic medical school opened at Campbell University, and programs training PAs and NPs have grown dramatically over the past 10 years, with nine NP programs and 11 PA programs. According to Skipper’s article in this issue, the growth in some of these programs seeks to impact the need for clinicians in rural communities and improve overall patient outcomes [23]. Skipper also discusses the barriers to fully realizing all of the potential benefits of these programs.

We know that those most likely to serve in a rural community after training are those who grew up in a rural community [24], have community engagement experiences in rural communities during their training [25, 26], are celebrated in cohorts that intend rural service, and minimize educational debt [27]. The recommendations from the 2018 Update on Priority Strategies from the North Carolina Institute of Medicine 2014 Task Force on Rural Health align with this, calling for public programs to “place a priority during the admissions process on students who grew up in, and/or have a desire to practice in, health professional shortage areas” [28]. This issue’s article by Hodge discusses the new models of education provided by North Carolina’s five medical schools, which include longitudinal education programs in regional campus settings that strive to inspire service to the underserved [29].

Targeted programs to inspire and support students to work in rural communities, such as those within the UNC School of Medicine Office of Rural Initiatives, Campbell University’s medical school supported residencies at Cape Fear Valley Health (which was re-classified as a rural hospital), and Mountain Area Health Education Center (MAHEC)’s new residency programs, are also supported by the NCIOM task force report [28]. The report also calls for stipends for rural professionals to precept, educational programs to develop longitudinal curricula in rural settings, and further expansion of rural residency slots in addition to enhanced support for the Office of Rural Health for recruitment and debt-reduction efforts [28].

Dental and pharmacy schools are also changing the way that they educate their students. The University of North Carolina Adams School of Dentistry is transforming its curriculum to produce a different kind of dentist, more engaged with overall health and well-being. In this issue, Quinonez discusses the new Advocate, Clinician, and Thinker (ACT) framework [30]. According to the Brown article, communication between dentists and pharmacists in the care of patients is vital for better patient outcomes [31]. Their curriculum is moving from teacher-centered to more immersive and active learning to include practice for dentists communicating with pharmacies regarding a patient’s medication history, oral health, and infection prevention [31]. This team-based care model is one in which health care education is continually evolving to meet industry needs.

Interprofessional Education

Given that it is essential to practice interprofessional care to optimally meet the needs of patients, it is crucial that health profession learners work in teams, learning about the skill set of one another’s professions and advancing their own skills in effective engagement with each other. Interprofessional education (IPE) is defined by the World Health Organization (WHO) as “when two or more professionals learn with, from and about each other to improve collaboration and the quality of care” [32]. IPE is now a core accreditation requirement for most programs in health professional education. Many examples of this were highlighted in the recent issue of the North Carolina Medical Journal on this topic [33].

New Members of the Health Care Team Needed

New roles such as scribes, patient navigators, and expanded care coordinators add to the traditional jobs in the health care arena.

A partnership between UNC Hospitals and Durham Technical Community College has led to a new Associate in Applied Science (AAS) degree. This is one of the first community colleges in North Carolina to offer this particular educational pathway for an emerging health care profession; Anesthesia Technology admitted its first cohort in the fall of 2018. As outlined in the Ockert article, this was in response to significant changes in anesthesia techs’ credentialing level and educational requirements [34].

The push toward population health in our communities has created the need for the Community Health Worker (CHW). This vital member of the health care team, accord-
ing to the American Public Health Association, serves as a liaison between health providers and the community to link services and work toward better patient outcomes [35]. The BLS estimates that there will be a 16% increase in these jobs with North Carolina seeing 120 CHW job openings each year continuing into 2026 [8].

As health care modernizes at such a fast pace, the roles of its traditional team members are changing. This is particularly true of pharmacists in many settings. In particular, in rural areas of North Carolina, pharmacists often practice around fewer prescribers and concurrently they serve as crucial experts in disease management. To best prepare pharmacists for such service in rural communities, the UNC Eschelman School of Pharmacy has established a Rural Pharmacy Health Certificate Program, as outlined in the article in this issue by Brown [31].

**New Content for Health Care Professionals to Learn**

In addition to new interprofessional skills that have become so important, there is new content for modern health professionals to master. Some of that content falls into a category labeled by some, such as the American Medical Association, as Health System Science [36]. Health System Science includes topics such as patient safety, quality improvement, health policy, social determinants of health, and IPE, which were less likely to be addressed in older traditional models of training. These skills now help all clinicians work together to improve the health of populations.

Similarly, some of health care in the future will likely be delivered remotely. Learning effective skills in telemedicine has become a priority in some training programs. Certainly telemedicine can improve access to specialty care, including psychiatry and a variety of consultative disciplines. Virtual reality and artificial intelligence are each on the brink of being quite useful in health care delivery. Educational leaders preparing the workforce of tomorrow must anticipate these changes and ensure appropriate curricular exposure. Today’s teachers and learners must embrace technology that enhances care delivery.

Curricula are now being developed in more patient- and culturally centered ways. As the population of North Carolina diversifies, health professionals face challenges of effective communication in multiple languages and the cultural awareness and sensitivity required to be effective across varied populations. That has led to many offerings of courses such as Medical Spanish and Medical Mandarin, added on top of the traditional curricular experiences.

Finally, health profession programs must ensure that teaching addresses all of the modern public health problems our population faces. According to McEwen’s writing in this issue, medical schools are also now investing time in teaching their students how to prevent, identify, and treat substance use disorders in order to combat the opioid epidemic in our state [37].

**What Gaps and Challenges Still Exist?**

Regardless of health profession, education and training has become more expensive and the debt burden on students is increasing. The Association of American Colleges reports that the average medical school debt balance for graduating physicians in 2015 was $183,000 [38] and for pharmacists was $157,425 [39]. This debt burden not only limits career choice but also concurrently encourages graduates to work in more lucrative fields and settings.

Another challenge facing health profession education is the lack of clinical teachers, often referred to as preceptors [40]. As the health care workforce is driven toward a productivity mindset with more aggressive markers and an increased pace of work, more and more professionals are unwilling to slow their efficiency by having students learn beside them. This is a challenge to the traditional model of volunteer clinicians teaching the future generation through their work with real patients. While much can be accomplished through simulation, simulation is likewise expensive and may lack the apprenticeship, role modeling, and humanism for ideal career inspiration. Educators work to ensure that learners add value in the authentic clinical setting but it must be recognized that it takes time to learn.

Productivity pressures, including the demands of the electronic health record, challenge the health profession workforce with potentially higher rates of career burnout. We must address the burnout problem in the health professions to achieve the Quadruple Aim [41] of best outcomes for the population and each patient in a cost-effective manner that is sustainable for the health profession workforce.

**Summary and Conclusions**

Creating a health care workforce adequate in number, optimally distributed geographically, skilled with forward-looking expertise, and empowered to practice in interprofessional teams at the highest extent of their licenses will take a great deal of work. In North Carolina, thanks to our many health profession schools and our strong public higher education system, we are poised for progress. This issue of the NCMJ demonstrates some inspiring examples on which to build the workforce to meet our needs. A call to bolster the workforce in rural North Carolina and the mental health workforce across the state is clearly articulated.

However, while educational innovations and pipeline programs into the health professions may effectively produce the professionals we need to serve the population, the health profession workforce alone is insufficient to achieve the health outcomes to which we aspire. Health professionals recognize that the social determinants of health are often the greatest driver of health outcomes, and often the most difficult factor for health professionals to impact. To truly improve health and well-being in our state will require the attention of all, not just those who train as health professionals. NCMJ
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