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NURSING AT AN INFLECTION POINT: CREATING SYSTEMS OF CARE THAT SUPPORT AND VALUE THE CONTRIBUTIONS OF NURSES

National Advisory Council on Nurse Education and Practice

20th Report

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National Advisory Council on Nurse Education and Practice

20th Report to the Secretary of Health and Human Services and the United States Congress

January 2025

The views expressed in this document are solely those of the National Advisory Council on Nurse Education and Practice and do not necessarily represent the views of the Health Resources and Services Administration nor the United States Government.

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The National Advisory Council on Nurse Education and Practice

The Secretary of Health and Human Services (HHS) and, by delegation, the Administrator of the Health Resources and Services Administration (HRSA), are charged under Title VIII of the Public Health Service Act, as amended, with responsibility for a wide range of activities in support of nursing education and practice including: enhancement of the composition of the nursing workforce; improvement of the distribution and utilization of nurses to meet the health needs of the nation; expansion of the knowledge, skills, and capabilities of nurses to enhance the quality of nursing practice; development and dissemination of improved models of organization, financing, and delivery of nursing services; and promotion of interdisciplinary approaches to the delivery of health services, particularly in the context of public health and primary care.

Authority

Authority is granted though section 851 of the Public Health Service Act, as amended (42 U.S.C. 297t). The Council is governed by provisions of the Federal Advisory Committee Act, as amended (5 U.S.C. Appendix 1-16), which sets forth standards for the formation and use of advisory committees.

Function

The National Advisory Council on Nurse Education and Practice (NACNEP, or the Council) advises and makes recommendations to the Secretary and Congress on policy matters arising in the administration of Title VIII, including the range of issues relating to the nurse workforce, nursing education, and nursing practice improvement. The Council may make specific recommendations to the Secretary and Congress regarding programs administered by the Division of Nursing and Public Health, particularly within the context of the enabling legislation and the Division's mission and strategic directions, as a means of enhancing the health of the public through the development of the nurse workforce.

Additionally, the Council provides advice to the Secretary and Congress in preparation of general regulations and with respect to policy matters arising in the administration of this title including the range of issues relating to nurse supply, education, and practice improvement.

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The preparation of NACNEP's 20th Report involved a collaborative effort with input from all Council members. The following two work groups – the recommendations work group and writing work group – were indispensable in the development of the Council's recommendations and the drafting of the report text.

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NACNEP appreciates the hard work and dedication of all these individuals who contributed to the development and completion of its 20th Report.

Executive Summary

Since its inception, the nursing profession has worked to promote health and provide health care to those in need. To respond to long-standing societal pressures and in the aftermath of the COVID-19 pandemic, the nursing profession faces a significant inflection point: many RNs are reporting exhaustion and burnout while too few students are entering the nursing pathway; strains on nursing faculty, as well as on the hospitals and other health care institutions, are impairing clinical training; advanced practice registered nurses (APRNs) are too often constrained in practicing to the full scope of their education and training; and healthcare technologies, including artificial intelligence (AI) applications, are advancing rapidly but are often poorly integrated into the routine clinical care tools upon which nurses rely. Health care systems are struggling to find effective responses. To address the health care needs of the nation, policymakers need to take bold action to strengthen the nursing profession and rebuild and replenish the nursing workforce.

Compensation helps define value, and nurses are not compensated in accordance with the value they bring in promoting health and delivering patient care. Nursing services are typically classified under staffing costs or covered under "bed charges" or other indirect charges. Thus, nurses are not able to bill for their many critical contributions to patient care. Yet the demand for nursing services is increasing, especially as the nation's population ages. There is a need for structural change in the way nursing services are captured and reimbursed. For nursing to recover from the disruptions of the pandemic and advance as a profession, nurses must be recognized as caring and trusted professionals, and nursing services must be included in the revenue-generating column of the healthcare financial spreadsheet.

The persistent shortage of nursing professionals has resulted in pressures among nursing schools to expand enrollment. At the same time, hospitals and other health care organizations are facing staffing challenges which strain their capacity and stretch their resources to support student learners in clinical training. Nursing programs and healthcare organizations must develop effective partnerships and adapt educational programs to meet the learning styles of a new generation of learners. Thus, there is a need for investment in new and sustainable innovations to support clinical practicum experiences at all levels, ranging from prelicensure nursing students transitioning into nursing practice to APRNs training for complex patient care roles.

As the country enters the post-pandemic period, it faces significant concerns about the capacity of the health workforce to meet the demands of a growing and aging population, while an increasing number of rural and other underserved communities have been designated as health professional shortage areas. APRNs, with their advanced education and training requirements, could help address this shortage of providers. However, state and federal regulations often limit independent APRN practice, posing a significant barrier to health care access that can have deep and long-standing adverse impacts on the health of individuals and communities. The time of the COVID-19 pandemic brought a temporary easing of regulatory barriers across several states that expanded the independent authority of APRNs, allowing APRNs to adapt their practice, contribute to health care access, and provide lifesaving care in hospitals, clinics, and community settings across the country. These changes should be adopted permanently.

Meanwhile, health care delivery is in a constant state of flux due to the rapid development and deployment of advances in healthcare technology, including artificial intelligence (AI) tools. Nurses comprise the largest proportion of the global health care workforce. As the primary users of and stakeholders in healthcare technology, nurses must lead the design and ethical use of digital tools in health care. Devices that assist in patient monitoring or that expand virtual nursing practice could significantly improve patient health outcomes, while AI applications have demonstrated an ability to recognize patterns and identify problems to alert nurses and the health care team to intervene. Technologic tools can augment certain routine functions, allowing nurses more time for direct patient care. Still, patients need and want the direct care, education, communication, and empathetic contact that nurses provide. Investments in engaging nurses in the early stages of design and development of technological and AI innovations can mitigate potential workflow inefficiencies, strengthen nursing practice, and improve patient outcomes.

NACNEP's Call for Action

The charge to NACNEP includes making recommendations to the Secretary of Health and Human Services (HHS) and Congress on policy matters arising in the administration of Title VIII of the Public Health Service Act, including the range of issues relating to the nurse workforce, nursing education, and nursing practice improvement. To strengthen the nursing workforce and prepare nurses to adapt to the changes brought by health care technology and AI tools, the members of NACNEP call for bold and innovative approaches to bolster federal support for the nursing workforce along four lines:

- Valuing the impact of nursing care on patient outcomes.
- Strengthening academic-practice partnerships.
- Supporting full practice for advanced practice registered nurses.
- Advancing the infusion of technology into nursing education and practice.

The Council's recommendations outline some initial steps that promise to substantially enhance the nursing workforce and mitigate current challenges, toward the goal of higher quality healthcare for all.

NACNEP Recommendations to the Secretary of HHS and Congress

1. Fund direct reimbursement demonstration projects that quantify the impact of nursing care on quality patient outcomes.
2. Create sustainable academic-practice partnerships across environments of care that result in data-based demonstration projects supporting transition to practice and retention of a diverse nursing workforce.
3. Remove practice barriers for advanced practice registered nurses.
4. Provide funding to support the infusion of nurse-centered technology and integration of artificial intelligence (AI) into nursing care delivery, in both education and practice.

Introduction

The nursing profession faces a significant inflection point due to burnout, decreased enrollments, strains on nursing faculty and hospitals, restrictions on practice, and the rapid advance of healthcare technologies that are disrupting routine clinical tools. NACNEP calls for bold and innovative approaches to bolster federal support for the nursing workforce.

Since its inception, the nursing profession has worked to promote health and provide health care to those in need. The American Nurses Association (ANA, n.d.a) defines nursing as "the protection, promotion, and optimization of health and abilities; prevention of illness and injury; facilitation of healing; alleviation of suffering through the diagnosis and treatment of human response; and advocacy in the care of individuals, families, groups, communities, and populations." This is the broad charge that registered nurses (RNs) and advanced practice registered nurses (APRNs) fulfill each day.

In the aftermath of the COVID-19 pandemic and the stresses it imposed on the healthcare workforce, the nursing profession faces a significant inflection point. Many RNs are reporting exhaustion and burnout and are leaving the profession, while too few students are entering the nursing pathway, creating concerns of a looming nurse staffing crisis that will challenge the delivery of basic health care. Insufficient numbers of nurse faculty and clinical preceptors, combined with strains on hospitals and other health care institutions, are impairing traditional sites of clinical training. APRNs are too often constrained in practicing to the full scope of their education and training, exacerbating problems of access to health care, especially in rural and other underserved areas. Meanwhile, health care technologies, including artificial intelligence (AI) applications, are advancing rapidly but are too often poorly integrated into the routine clinical care tools that benefit the human side of health care offered by nurses. How will the nursing profession approach the future?

As the largest of the health care professions, nursing is integrated in all segments of society, and the profession has constantly adapted in response to societal changes. As Donahue (2011) stated, "The great turning points in world progress have also been important turning points in nursing (p.2)." A wide range of societal forces, some that have been building for decades and others that have emerged from more recent stressors, have brought nursing to this inflection point. Health care systems are struggling to find effective responses. To address the health care needs the nation, policymakers need to take bold action to strengthen the nursing profession and rebuild and replenish the nursing workforce.

The National Advisory Council on Nurse Education and Practice (NACNEP) has explored the challenges facing the nursing profession. The Council has heard from experts on ways to enhance the education, recruitment, and retention of nurses, and improve health care systems to facilitate and value nursing care. NACNEP notes four specific areas in need of immediate attention and federal investment: 1) the failure of current healthcare reimbursement systems to recognize and remunerate care delivered by nurses, 2) impaired academic-practice partnerships that struggle to prepare undergraduate and graduate nursing students for professional nursing practice, 3) regulatory barriers that keep APRNs from working to the full scope of their education, training, and experience; and 4) limited integration of new healthcare technologies, including AI, into nursing care, in both education and practice.

The charge to NACNEP includes making recommendations to the Secretary of Health and Human Services (HHS) and Congress on policy matters arising in the administration of programs authorized under Title VIII of the Public Health Service Act, including the range of issues relating to the nurse workforce, nursing education, and nursing practice improvement. NACNEP offers this report and recommendations to outline some bold steps toward rebuilding a strong and resilient nursing workforce and mitigating current challenges, moving the nation closer toward the goal of optimal and equitable quality health care for all.

Valuing the Impact of Nursing Care on Patient Outcomes

Compensation helps define value. In a troubling but long-standing problem for the nursing profession, nurses are not compensated in accordance with the value they bring. Current processes for health care services reimbursement fail to recognize nursing professionals as highly trained providers qualified to deliver specific health care services that promote health and improve patient care. Instead, nursing services are typically classified under staffing costs, and are bundled into the "bed charge" of the hospital or considered as indirect charges in the ambulatory care environment.

> Nurses cannot bill for most services they provide, and they are not compensated according to the value they bring. There is a need for structural change in the way nursing services are captured and reimbursed.

Nurses work collaboratively with, but independent from, members of other health professions such as physicians, physical therapists, and social workers. Unlike members of these other professions, though, nurses are unable to bill health care payors – including Medicare, the largest payor for services in the United States – for most of the care services they deliver. Thus, while providers in other disciplines are recognized within the health care system as generating revenue, nurses are perceived primarily as a labor cost. The critical contributions of nurses to patient care are overlooked, and thus are not appropriately recognized, compensated, and valued.

As the nation enters the post-pandemic phase, nurses are exhausted and burnt-out and leaving the profession at a faster pace than they can be replenished. Nursing workforce projections by the Health Resources and Services Administration (HRSA, 2024) from the latest National Sample Survey of Registered Nurses indicate a shortage of over 330,000 RNs by 2036. For the first time in decades, the number of students enrolling in nursing schools has declined. According to recent data from the American Association of Colleges of Nursing (AACN, 2023), the number of students in entry-level baccalaureate nursing programs decreased by 1.4 percent in 2022, ending a 20-year period of steady enrollment growth. Yet the need for nursing services is increasing, especially as the nation's population ages.

For nursing to recover from the workforce disruptions of the pandemic and to advance as a profession, nurses must be recognized as caring and trusted professionals, and nursing services must be included in the revenue-generating column of the healthcare financial spreadsheet. As stated by Hooper (2022), "patients are admitted to the hospital for one, and only one reason: the need for 24/7 nursing care. Without nursing, there is no hospital, there are no surgeries, there is no care. (p.1)."

Calculating Nursing Workload

The nursing profession faces challenges under current models of reimbursement for health care services. With its broad scope, nursing overlaps with many other disciplinary foci, and the specific contributions of nurses can be difficult to differentiate from other health care interventions. Current models do not classify as reimbursable several critical elements of nursing care delivery such as patient assessment and monitoring, care planning, chronic care management, health education, health care interventions and procedures, and evaluation of the human response. Including nursing services as a bundled cost precludes the ability of health care systems to recognize the impact of nursing care delivered by both RNs and APRNs. Rather, many health care organizations constantly seek to reduce costs of nursing service provision, seeing nurses only as labor costs. The health care system must develop new models that specifically address nursing as a unique service that generates revenue for patient care.

Systems of calculating nursing workload have been designed and tested since at least the 1980s. However, none have shown to be consistently reliable or valid at measuring the value of nursing care or guiding reimbursement. Currently, direct reimbursement is limited to only a few nursing services, such as diabetes education and wound care. While recent research has mobilized technology to characterize nurses' work at the bedside and improve workflow (Sun et al., 2024), the nursing profession struggles to quantify the significant impact nurses have on patients, families, and populations.

From a seminal study by Aiken et al (2002), surgical patients in hospitals with high patient-to-nurse ratios faced an increased the risk of death, while nurses reported higher burnout and job dissatisfaction. Lasater et al (2021) found that higher nursing workloads on medical/surgical wards resulted in longer lengths of stay and increased rates of 30-day readmission and in-hospital mortality. Another recent study (Lasater et al., 2024) found that patients with COVID-19 who were admitted to hospitals with higher nursing workloads and a history of poor nurse work environment had a higher risk of mortality during their hospital stay than those cared for in hospitals with adequate nurse staffing and a strong work environment.

However, because nursing services are included in the bed charge or indirect costs, current practices create financial incentives to focus on minimizing costs of nursing staff, which leads to staff cuts and higher nursing workloads. In many cases, the pressure to minimize nurse staffing costs has created unsafe and untenable practice environments for nurses, driving the need for additional healthcare regulations to promote safe patient care practices.

Primary care clinics and other outpatient settings are transitioning to interprofessional, team-based models of care increasingly dependent on NPs for care delivery (Annis & Hong, 2023). The consequences of lack of reimbursement for care provided by nurses extends to these ambulatory care settings and are contributing to broader health system challenges of access to care, especially in rural and underserved areas.

Demonstration Projects

The American Nurses Foundation (ANF, 2024a), the philanthropic arm of the ANA, acknowledged the reality of the current system in its recent report, stating "the lack of reimbursement to nurses for the care they provide hides the value of the role they play in

integrating quality, safety, and efficiency. The cost of nursing is accounted as a liability not an investment in patient care. In hospitals, nursing costs are bundled into the costs of patients' rooms. When faced with difficult cost-driven decisions, nursing is often the first area to receive cuts." Under the Reimagining Nursing Initiative, where nurses are valued for their expertise and empowered to lead, the ANF (2024b) funded ten nurse-led pilot programs that are demonstrating an impact on improving access to care, coordination of care, and patient outcomes.

As the Centers for Medicare & Medicaid Services (CMS) and other insurers seek to identify ways to improve care and move to value-based reimbursement models, specific actions are needed to ensure that the services provided by nurses are captured and valued. Many services involved in care coordination and care management fall within the independent nursing scope of practice. For example, RNs and APRNs are well suited to conduct Medicare Annual Wellness Visits (AWVs), which are an important preventive health service for Medicare recipients (Simpson & Kovich, 2019). Many primary care practices have found AWVs provided by RNs to be cost-effective. However, current reimbursement practices require that services such as these be billed, not by the nurse provider, but rather incident to the billing physician.

Within CMS, the education, experience, and perspectives of over 200 RNs in staff and leadership positions provide the nursing profession with a strong clinical voice into the healthcare policy process in the areas of clinical regulation, quality improvement, and health care reimbursement. As the ANA (2017) reports, the Affordable Care Act established the Center for Medicare and Medicaid Innovation (CMMI) at CMS and granted it authority to create new demonstration projects that allow the HHS Secretary and CMS "to waive provisions of statute and regulations to test innovative payment and service delivery models to reduce program expenditures under Medicare and Medicaid while preserving or enhancing the quality of care (p. 22)." Through CMMI, CMS has the capability to fund demonstration projects based on the ANA model and other similar models to develop and test systems that provide direct reimbursement for services provided by RNs.

Along with the ANA demonstration projects and CMS efforts, nurses need a voice in the design and use of hospital data and billing systems, such as the electronic health record, to improve usability and efficiency (Rossi et al, 2023). Nursing input would better enable these systems to capture services provided by RNs and demonstrate the impact of nursing services on patient outcomes (Page & Schadler, 2014).

Need for Structural Change

The issue of nursing services being seen as just costs, not value, has been raised during the NACNEP deliberations over several years. The current members of the Council strongly believe in the need for structural change in the way nursing services are captured and reimbursed. Such structural changes will better recognize nursing contributions to patient care and support the practice of professional nursing. NACNEP believes that development of specific mechanisms to capture nursing interventions must be part of any future health care reimbursement models. NACNEP recognizes the need for bold changes to the health care systems in which nurses provide patient care to better measure and define the value of nursing care.

Strengthening Academic-Practice Partnerships

The persistent shortage of nursing professionals to support the needs of patients across the country has resulted in pressures among nursing schools at all levels to expand enrollment. At the same time, hospitals and other health care organizations are facing staffing challenges which strain their capacity and stretch their resources to support student learners in clinical education. Traditional models of clinical placements are becoming untenable, given the increased number of students needing to be placed for practicum experiences, a long-standing shortage of trained nursing preceptors and faculty, and inadequate clinical site capacity to host nursing students as learners. In addition, nursing schools and healthcare organizations must also adapt educational programs to meet the learning styles and needs of a new generation of learners, who are comfortable using information technology to learn, and prefer to work at their own pace, have input into decisions, receive careful guidance from their clinical educators, and work in environments that show concern for their well-being (DiMattio & Hudacek, 2020). Thus, there is a need for new and sustainable innovations to support clinical practicum experiences at all levels, ranging from prelicensure nursing students entering nursing practice to APRNs training for complex care delivery roles.

> Nursing schools and health care systems need new and sustainable innovations to support clinical practicum experiences for nursing education at all levels.

Examples of Effective Academic-Practice Partnerships

The collaboration needed between academic institutions and clinical practice sites to organize and execute clinical experiences is complex and requires a shared commitment among both partners. These vital alliances help to ensure high quality in nursing and healthcare education (Bivall et al., 2021). Academic-practice partnerships serve a strategic purpose to advance the mutual needs and interests of both sides in student education and preparation for practice, staff recruitment and advancement, and research. A variety of innovations have been discussed in the nursing literature, and examples include formalized clinical partnerships, use of embedded faculty or new clinical instructor models, and the formation of dedicated educational units (DEUs). A systematic literature review conducted in 2020 found that immersive clinical experiences and use of practice partnership models such as DEUs and other hybrid model collaborations between academic faculty and clinical mentors in practice enhances the clinical learning of the student (Pedregosa et al., 2020). The University of Minnesota and the Mayo Clinic partnered to create a successful ambulatory care DEU, using embedded staff as Clinical Nurse Teachers (Benike et al., 2023). The District of Columbia Practice Academic Collaborative is another example of an academic-practice partnership that created an immersive pediatric rotation for undergraduate nursing students and expanded the capacity of the practice partner to provide these experiences for students from a variety of nursing programs (King et al., 2022). Through an academic-practice partnership, the University of Arkansas at Little Rock developed an 18-month accelerated associate degree program to address a nursing shortage in central Arkansas, provide mentoring to nursing students, and support workforce preparation and retention efforts (Fletcher et al., 2021). Another academic practice partnership based in Los Angeles supported a summer immersion program in high need areas to address the increasing shortage of perioperative nurses. Students completed an internship between their junior and senior years, followed by the opportunity to continue clinical rotations at the facility during their senior year. This successful and innovative opportunity continued following the initial implementation period (Fujihara & FitzGerald, 2020).

A scoping review conducted by Patterson et al. (2024) found a specific need to leverage academic-practice partnerships to enhance clinical nursing education in rural settings. For example, when faced with a critical faculty shortage, the University of Tulsa developed partnerships with local health systems to redesign their model of clinical education using embedded staff nurses for a clinical cohort model, in which students participated in all clinical learning experiences within one health system. Evaluation of the model indicated cost savings to the school of nursing, successful NCLEX pass rates for students, and high rates of employment and retention of the graduate nurse participants (Buron et al., 2024).

Numerous groups have called for advancement of academic-practice partnerships to support nursing education, including the AACN (2019), and the National Academies of Sciences, Engineering, and Medicine (2021). Many nursing organizations have also developed guidelines for developing and sustaining academic practice partnerships. However, sustainable funding models as well as leadership training to promote effective partnerships are needed to ensure that strong academic partnerships exist to co-create clinical learning experiences, and to evaluate effectiveness of these new models for clinical education in nursing. In addition, given the workforce needs for nurses in rural communities and other high need areas, program innovations must also focus on ambulatory care settings such as federally qualified health centers, area health education centers, and rural health clinics.

NACNEP has highlighted the importance of investment in academic-practice partnerships in prior reports to promote faculty development (2021), enhance public health preparation (2023a), and support rural training (2024). In addition to ongoing funding to incentivize these partnerships, the formalization of these partnerships requires dedicated roles and communication channels between the partners to support the continuity of the commitment. Ongoing leadership development to engage in academic-practice partnerships is needed throughout health care organizations to ensure that nurse leaders and other organizational leaders are fully committed to these partnerships to support nursing education and preparation of the workforce in the event of changes to leadership personnel.

Residency Programs to Support Transition to Practice

Employers of new graduate nurses increasingly recognize the need for additional competency development to support transition to practice. New strategies are needed to ensure that the nursing workforce is well-prepared to address health needs of individuals and communities. Immersive experiences, through externships, internships, and residency programs have been found to support retention, development of confidence among new nurses, and improved work satisfaction (Goode et al., 2018; Mohamed & Al-Hmaimat, 2024). As with prelicensure clinical training experiences, these programs must have a sustainable funding model and be co-designed by academic nursing faculty and clinical practice partners. There are several innovations being implemented at the state level, such as Arizona's Transition to Practice Program for New Graduate Registered Nurses (Arizona Hospital and Healthcare Association, n.d.) which was created through a legislative mandate to support the transition of new graduate nurses into practice, provide professional development opportunities, and address resilience and preparedness. In the state of Maryland, all hospitals have adopted a 12-month standardized, vendor supported nurse residency program. A program evaluation of the statewide effort found challenges in funding and supporting these programs and issues regarding employment agreements, especially in smaller and rural hospitals (Trandel-Korenschuk et al., 2023).

However, the literature also reports that organizational and financial challenges inhibit the formation of sustainable transition to practice program models, such as nurse residencies (Mohamed & Al-Hmaimat, 2024). Organization barriers include the lack of nurses who are prepared and supported to serve in preceptor roles, as well as inconsistent leadership commitment. Nurse leaders also acknowledge the financial obstacles in demonstrating the return on investment to support the sustainability of these programs (Reebals et al., 2022). A recent literature review (Chant & Westendorf, 2019) suggests that nurse residency programs benefit hospitals and other healthcare agencies that are invested in the retention and satisfaction of new nurses. Successful programs require strong leadership, dedicated preceptors and mentors, robust evaluation mechanisms, and consistent feedback from the nurse residents to guide updates. With their documented success, a sustainable funding model for new graduate nurse residencies is warranted.

Supporting APRN Fellowships

Funding to support sustainable graduate residency and fellowship programs for APRNs is also needed, particularly in high need areas (i.e., rural settings, primary care, specialty care, behavioral health and substance use treatment). A grant funding program through the CMS-supported Graduate Nursing Education (GNE) demonstration project [since discontinued] funded a limited number of post graduate APRN fellowships, along the model of graduate medical education (GME) (Todd et al., 2019). A recent policy analysis of this program indicated that APRN students who participated in GNE-funded programs had higher retention rates than APRN students in non-participating programs. Funding to support GNE holds promise in addressing the nationwide deficit of primary care providers (Porat-Dahlerbruch et al., 2024).

One project that was part of the GNE demonstration program involved an innovative academic-practice partnership model to enhance precepting capacity in a primary care clinic. Use of this model increased access to care for patients and captured the impact of this endeavor on quality outcomes and practice productivity. However, other mechanisms to support sustainability were needed after the GNE program ended. The authors stated that "until there is equity in federal funding for graduate nursing training to meet that of our medical colleagues, nursing will continue to need to look for creative alternatives" (Bavis et al., 2024, p. 3).

Federal GME investments total around $80 billion each year, while investments in nursing education are only about 15% of this amount. Nursing is the largest healthcare profession, but federal investment in nursing education and training pale in comparison to GME (Porat-Dahlerbruch et al., 2024).

NACNEP encourages the Secretary of HHS and Congress to support innovations in nursing education through formalized mechanisms to ensure strong academic-practice partnerships that enhance capacity for meaningful clinical learning experiences and realize a well-prepared professional nursing workforce. Formalized partnerships between academic nursing and health care organizations must be adopted through use of sustainable funding models to support future nurses during their educational experiences and new graduate nurses in their transition to practice, with the GNE demonstration project serving as one possible model.

Removing Practice Barriers for Advanced Practice Registered Nursing

There is significant concern about the capacity of the health workforce to meet the demands of the United States, especially as the country moves into the post-pandemic period. More than 100 million Americans reside in communities designated by HRSA as health professional shortage areas (HPSAs). Approximately half of the HPSAs are situated in rural communities, where comparatively few physicians choose to practice, often due to less favorable reimbursement and lifestyle factors. To meet the primary care, dental health, and mental health care access needs of these HPSAs would require an influx of almost 30,000 practitioners (HRSA, 2024).

> APRNs can help meet the growing health care demands of the nation, but state and federal regulations often restrict APRN practice and limit access to care.

APRNs offer a different perspective. As ANA notes, APRN is an umbrella terms that includes nurse practitioners (NPs), certified registered nurse anesthetists (CRNAs), certified nurse midwives, and clinical nurse specialists. APRNs must meet advanced educational and training requirements, and they "treat and diagnose illnesses, advise the public on health issues, manage chronic disease, and engage in continuous education to remain ahead of any technological, methodological, or other developments in the field (ANA, n.d.b)." Xue et al. (2019) found that NPs are the largest and fastest growing group of non-physician primary care providers in rural communities and are helping to increase access to primary care in these areas. Thus, APRNs could help address the shortage of rural providers. However, state, and federal regulations often require physician oversight of APRN practice, and the scarcity of collaborating physicians in these regions poses a significant barrier to health care access. This restriction serves as a major barrier to independent APRN practice across health care systems, limiting health care access, quality of care, and health outcomes.

Reforming APRN Practice

Many health care and patient advocacy organizations across the political spectrum recognize the need to make reforms that put patients first and make health care delivery more efficient. There is a growing trend in recent years of states seeking to remove unnecessary barriers to APRN practice that limit access to care (Kleinpell et al. 2021; Schorn et al., 2022). The clinical education, experience, and training required of APRNs makes them valuable members of interprofessional care teams.

For example, CRNAs provide most of the anesthesia and pain management services in rural hospitals. However, many states require physician supervision of CRNA practice. A review of studies found that CRNAs provide safe and cost-effective care, and physician supervision of CRNAs does not improve patient outcomes (Jordan, 2011; Needleman & Minnick, 2009; Negrusa et al., 2016). When CMS allowed states to opt out of the physician oversight provision in 2001, fourteen states exercised that option, and a study by Dulisse and Cromwell (2010) found no evidence of a decrease in the quality of care or an increase in patient complications. During the COVID-19 public health emergency (PHE) period, CMS (2022) instituted a temporary waiver of the CRNA supervision requirement. The American Association of Nurse Anesthesiology (AANA, 2023) reported that many states opted out of the physician supervision requirement during the PHE with no decrease in the quality of anesthesia care observed, and no states have reversed that decision. Historical bipartisan legislation to remove this barrier has

been endorsed by such organizations as AARP, the National Association of Rural Health Clinics, and the National Rural Health Association, as well as over 235 national, state, and local organizations.

NPs are the largest group of APRNs and they play a critical role in access to care in both primary and acute care settings. However, NPs continue to face an uphill battle to practice to the full extent of their education and training. As of 2023, there were 30 states or territories with full practice environments for NPs, while the remaining states or territories have restrictions in place that limit the ability of NPs to provide care in at least one element of practice (American Association of Nurse Practitioners [AANP], 2024a). These practice limitations can impair patient health outcomes across the nation and further widen health disparities among the nation's most vulnerable and marginalized populations. The possibility of exacerbating current health inequities is why AANP is calling for the modernization of state licensure laws, along with sustainable reimbursement and care delivery models to expand access to care (AANP, 2024b).

NACNEP recognizes that some physician professional advocacy groups and organizations might resist changes to state regulations that would allow for full APRN practice. Still, evidence shows that the quality of care provided by APRNs is comparable to that provided by physicians (Buerhaus, 2018; Buerhaus & Hayes, 2024). Studies have shown that APRNs provide high-quality care, and removing practice barriers can significantly improve access in underserved areas (AANP, 2023). State-level restrictions on APRN practice directly impact rural communities, which tend to have higher rates of poverty, older residents, poorer overall levels of health, and fewer provider practices, hospitals, and other health care facilities. NACNEP suggests that CMS could incentivize states, as well as hospitals and other health agencies, to eliminate APRN practice barrier restrictions, an approach that could benefit patients and the health care system by enhancing health care access, promoting cost efficiency and interprofessional collaboration, and optimizing the APRN workforce.

With the severe shortage of primary care physicians and the critical role that APRNs can play in meeting the needs of rural America, it is imperative to remove restrictive federal and state regulations that hinder patient access to care and limit APRN practice. NACNEP (2023a) noted some of the temporary easing of regulatory barriers instituted across several states at the height of the COVID-19 pandemic "provided an expansion of the authority of APRNs to practice more independently and contribute to health care access (p. 13)." These changes allowed APRNs to adapt their practice, contribute to health care access, and provide lifesaving care in hospitals, clinics, and community settings across the country. In addition, NACNEP (2023b) submitted a letter to HHS Secretary Becerra and Congress in support of legislation, the I CAN Act, that would advance the practice of APRNs and recognize their important role in providing primary and acute care services to many underserved populations, stating, "the pandemic exposed the need for structural changes within the United States health care system to allow APRNs to practice to the full scope of their license, as well as to shape and control their practice environment." The proposed legislation, along with incentives to eliminate regulatory barriers to APRN practice, holds the promise to increase health care access and efficiency while lowering costs for patients. Along with the recommendations in this report, NACNEP continues to support this legislation.

Supporting the Infusion of Technology into Nursing Education and Practice

Health care delivery in the United States and around the world is in a constant state of flux due in part to rapid development and deployment of advances in healthcare technology, including AI tools. Nurses must gain digital fluency and lead the ethical use of digital tools in health care.

Healthcare technology refers to the set of electronic devices, machines, and other tools or equipment, along with the necessary knowledge and skills in their use, that facilitate patient care (Johnson & Carrington, 2023). AI encompasses a broad category of tools involving the use of algorithms to drive software programs for hardware devices, and in health care it includes a wide range of existing, emerging, and future technologies intended to assume routine tasks and assist nurses in caring for their patients (ANA, 2022). As such, healthcare delivery and technology are constantly co-evolving. As health care becomes more complex, so too does the technology created to enhance care delivery (International Council of Nurses, 2023; Johnson et al., 2024). Nurses comprise the largest proportion of the global health care workforce and are primary users of and stakeholders in these technological/AI innovations.

> Nurses must lead in the development of health technology tools and their ethical use.

Technological devices that assist in patient monitoring or that expand virtual nursing practice could significantly improve patient health outcomes as they facilitate timely access to nursing care, particularly in settings that have nursing shortages or that lack specific nursing expertise (e.g., sexual assault nurse examiners). Meanwhile, AI tools have demonstrated an ability to recognize patterns and project potential outcomes. Properly designed AI tools could quickly identify the fluctuating or declining status of a critically ill patient and alert nurses and the health care team to intervene. In broader terms of population health, insights gained using predictive analytics of hundreds of thousands of health data points could yield faster identification of public health threats.

Technology and its accompanying tools can perform certain routine tasks and inform and augment patient surveillance to improve efficiency, allowing nurses more time for direct patient care (Vasquez et al, 2023). Patients need and want the direct care, education, communication, and empathetic contact that nurses provide. At the leadership and management level, the use of AI to inform staffing needs and patient assignments could free time for more creative work such as complex problem-solving tasks, healthcare improvement projects, strategic planning, professional growth activities, and scholarly writing – activities that add value to nursing and that benefit patients, organizations, and health care at large. The profession of nursing has always emphasized interpersonal relationships, perception, negotiation, persuasion, and communication. Technology cannot replace human touch as demonstrated through nursing assessment, diagnosis, critical thinking, clinical judgment, and emotional intelligence (Yakusheva et al., 2024).

Nursing Involvement in Technology Development

Many nurses and nurse entrepreneurs have designed and led technological innovations or participated on technology-development teams. Still, the rapid rate of change and the need for improved care coordination have demonstrated the need for more explicit and intentional nursing engagement in AI (Ronquillo et al, 2021). There are unfortunate examples of technological

adoptions for use in nursing that have failed to facilitate nursing workflow or improve patient outcomes, in part due to lack of nursing input through the process, inadequate nursing education on use of the technology, and lack of understanding of nurse-sensitive factors in care.

Technological/AI solutions must not contribute to or exacerbate nursing inefficiencies, which can result when developers fail to consider the full scope of nursing workflow. Nurses must have time to learn, incorporate, maintain, and troubleshoot new technology. To avoid unintended implementation challenges while maximizing the use of technological/AI tools, nurses should serve on, or lead teams committed to continuously enhancing their practice and improving outcomes for patients, families, and communities with non-human technological innovations (O'Keefe-McCarthy, 2009).

To ensure that technological/AI solutions are optimal and achieve their intended improvements and gains for health care delivery and specifically, nursing practice, it is critical that nurses contribute to development, deployment, and evaluation of technological/AI tools and solutions intended primarily for use by nurses. Nurses must work alongside those who design and engineer health care technology to guide implementation processes, including initial and ongoing education and training for the current and future nursing workforce. This process is essential to ensure competency and confidence with technological/AI solutions, as well as compatibility with existing nursing and health care team workflows, data security requirements, and patient consent/assent processes. Furthermore, nurses must inform strategies to address anticipated and unanticipated consequences of adopting new technological/AI tools into nursing practice, such as increased workload burdens, staffing needs, patient preferences and needs, ethical and patient privacy issues, and ongoing process improvements.

Too often, nurses are not included or consulted in the development of new health care technologies, which can lead to distrust and create a disconnect between nurses and the tools they could use to improve patient care. With the impact of new technologies and AI in health care, nurses need to advocate to include technology within nursing curricula at every level and promote competencies in nursing informatics (von Gerich et al., 2022). Increasing knowledge around these evolving technologies will equip nurses and nurse leaders to ask the right questions about the workflow influences and ethical concerns associated with new technology platforms. Armed with this knowledge and training, nurses can take their place at the forefront of innovative care models that "highlight the irreplaceable contribution of their profession in the age of technological advancements (Yakusheva et al., 2024)."

Therefore, funding to support this recommendation should focus on:

1. Educational and training initiatives that advance nurses' abilities and literacy with technological/AI tools, delivered within a comprehensive infrastructure that reaches all levels of nurses in training and in practice, including specialized nursing roles (i.e. nurse informaticists) or tracks that equip nurses to contribute to technological/AI solutions.

2. Programs that develop, implement, and evaluate technological/AI tools, including their impact on nursing practice, workflow, and patient outcomes, as well as interdisciplinary efforts to promote mutual understanding among nurses, technological staff, trainers, etc.

Educating nurses in the use of technology and engaging them in early stages of design and development of technological and AI innovations and all subsequent stages can mitigate potential workflow inefficiencies while providing benefits to nursing practice and improving patient outcomes.

Conclusion

Current challenges in the delivery of healthcare across the nation are complicated by a persistent and pervasive national nursing crisis. Many health care institutions and public health agencies across the United States lack a sufficient nursing workforce to meet the health care needs of the nation. The forces that have brought the nursing profession to this inflection point have been building for decades, yet the systems through which care is delivered have failed to respond effectively.

NACNEP has examined the challenges facing the nursing profession. Its members include practicing nurses, nurse educators, nurse scientists, and nurse and health care leaders. The Council has heard from frontline nurses and health care experts. The recommendations that NACNEP proposes will help improve health care systems, and promote the education, recruitment, practice, and retention of nurses. Bold policy actions, taken now, will serve to ensure a steady influx of new nurses to replenish the pipeline of nursing professionals, support and strengthen the practice of RNs and APRNs, and enhance the ability of technological innovations to facilitate and expand care, all toward the goal of improving health care access and ensuring the availability of high-quality health care for the nation.

NACNEP Recommendations and Rationale

1. Fund direct reimbursement demonstration projects that quantify the impact of nursing care on quality patient outcomes.

Rationale: Compensation helps define value. The current reimbursement system for health care services fails to recognize nursing professionals as highly trained providers, instead classifying nursing services under labor costs or bed charges. NACNEP calls for structural changes to reimbursement to better recognize nursing contributions to patient care and support the practice of professional nursing.

2. Create sustainable academic-practice partnerships across environments of care that result in data-based demonstration projects supporting transition to practice and retention of a diverse nursing workforce.

Rationale: The persistent shortage of nursing professionals has resulted in pressures among nursing schools at all levels to expand enrollment, while hospitals and other health care organizations face strains in supporting student learners in clinical education. NACNEP calls for formalized mechanisms to ensure strong academic-practice partnerships that can enhance clinical learning experiences and realize a well-prepared professional nursing workforce.

3. Remove practice barriers for advanced practice registered nurses.

Rationale: APRNs represent a significant health workforce resource to address health care access, especially in health professions shortage areas and other settings in need. While studies have shown APRNs provide care that is comparable to that of physicians, and often at a lower cost, APRN practice is restricted in many states. NACNEP calls for changes within the United States health care system to allow APRNs to practice to the full scope of their license, as well as to shape and control their practice environment.

4. Provide funding to support the infusion of nurse-centered technology and integration of artificial intelligence (AI) into nursing care delivery, in both education and practice.

Rationale: Health care technologies and AI tools are rapidly advancing in complexity, creating a constant state of flux. Nurses are primary users of and stakeholders in these technological/AI innovations, but they are often excluded from the design and implementation of technological or AI systems. NACNEP calls for investment to incorporate technology and AI in nursing education and practice to improve implementation and workflow.

Abbreviations and Acronyms

AACN	American Association of Colleges of Nursing
AANA	American Association of Nurse Anesthesiology
AANP	American Association of Nurse Practitioners
ANA	American Nurses Association
ANF	American Nurses Foundation
AI	Artificial Intelligence
APRN	Advance Practice Registered Nurse
AWV	Annual Wellness Visit
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
CRNA	Certified Registered Nurse Anesthetist
DEU	Dedicated Educational Unit
EHR	Electronic Health Record
GME	Graduate Medical Education
GNE	Graduate Nursing Education
HHS	Department of Health and Human Services
HPSA	Health Professional Shortage Areas
HRSA	Health Resources and Services Administration
NACNEP	National Advisory Council on Nurse Education and Practice
NP	Nurse Practitioner
PHE	Public Health Emergency
RN	Registered Nurse

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