

Advanced Practice in Nursing

Under the Auspices of the *International Council of Nurses (ICN)*

Series Editor: Christophe Debout

Sophia L. Thomas

Jackie S. Rowles *Editors*

Nurse Practitioners and Nurse Anesthetists: The Evolution of the Global Roles



 Springer

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Council of Nurses (ICN)

Series Editor

Christophe Debout

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This Series of concise monographs, endorsed by the International Council of Nurses, explores various aspects of advanced practice nursing at the international level.

The ICN definition provided in the Guidelines on Advanced Practice Nursing 2020 (ICN, 2020) has been adopted for this series to define advanced practice nursing: “A Nurse Practitioner/Advanced Practice Nurse is a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which they are credentialed to practice.” (ICN, 2020, p. 6). A Master’s degree is required for entry level.

At the international level, the three most common levels of advanced practice nursing include three levels of clinical practice:

Nurse practitioners (NPs) are advanced practice nurses who have integrated clinical skills associated with nursing and medicine in order to assess, diagnose and manage patients usually in primary healthcare (PHC) settings and acute care populations as well as ongoing care for populations with chronic illness (ICN, 2020). NPs usually have prescriptive authority and can make referrals to other healthcare professionals. Clinical nurse specialists (CNSs) provide expert clinical advice and care based on established diagnoses in specialized clinical fields of practice along with a systems approach in practicing as a member of the healthcare team (ICN, 2020). Nurse Anesthetists (NAs) who are defined by the 2021 ICN Guidelines: *A Nurse Anesthetist is an Advanced Practice Nurse who has the knowledge, skills and competencies to provide individualised care in anesthesia, pain management, and related anesthesia services to patients across the lifespan, whose health status may range from healthy through all levels of acuity, including immediate, severe, or life-threatening illnesses or injury (ICN, 2021).*

The scope of practice and responsibilities that define these three categories of advanced practice nurses includes five interrelated components:

- Clinical practice
- Consultation
- Education
- Leadership
- Research

The monograph Series addresses four topics associated with advanced practice nursing:

- APNs in clinical practice (NPs, CNSs, NAs)
- Education and continuous professional development for advanced practice nurses
- Coordination and implementation issues related to advanced practice nursing
- Policy and regulation for advanced practice nursing

The contributing authors represent international experts in their field along with representation from the ICN Nurse Practitioner/Advanced Practice Nurse Network. They include clinicians, educators, policymakers and researchers.

Each book within the series reflects the fundamentals of nursing which provides the foundation for advanced practice nursing. The aim is to promote evidence-informed advanced practice nursing.

Sophia L. Thomas • Jackie S. Rowles
Editors

Nurse Practitioners and Nurse Anesthetists: The Evolution of the Global Roles



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Preface

Through the generations, nurses have provided compassionate care through calamities including wars, famine, natural disasters as well as tending to the needs of those individuals who would otherwise go without care and succumb to illness and injuries.

The history of the global evolution of nursing begins at the dawn of time. To the modern observer, it is unfathomable to recognize the times in which nurses were not allowed to use a stethoscope, give an injection, or draw blood. Those tasks, and countless more, were historically deemed as part of the role of physicians. In the twenty-first century, the role of the nurse has grown and expanded to meet the healthcare needs of communities around the world. Advanced practice nursing (APN) has increasingly allowed nurses to practice to the full scope of their education and competencies. This includes the ability to assess, diagnose, treat, prescribe, provide anesthesia, anesthesia-related care and pain management for patients of all ages across the healthcare spectrum. The education and recognition of APNs whose competencies include complex decision-making with advanced skills and care management has resulted in nursing-led transformative care which has improved healthcare access and outcomes globally. Nurses are the largest segment of the healthcare workforce. Numerous research studies have proven that utilization of APNs allows for increased access to quality care. No prior texts have successfully chronicled the multiple aspects of these two APN roles while providing detailed illustrations of the roles' infancy and growth in countries throughout the world.

In 1877, the first nurse to specialize in anesthesia care paved the way for advanced practice nursing, and in 1965, the first nurse practitioner educational program was founded. Throughout early history, many brave pioneers made contributions which spearheaded nursing to be an essential and foundational role in healthcare. In *Nurse Practitioners and Nurse Anesthetists: The Evolution of the Global Roles*, the reader will gain insight into the history of these two transformative and impactful APN roles through the contributions of international authors who represent every World Health Organization Region of the world. Topics of discussion include licensure, practice, education, research, challenges, and impacts of these advanced practice roles.

Analysis of global role development illustrates the influence on healthcare from disasters to battlefields; clinical practice in urban and remote environments; the evolution of academic education growth and opportunities, as well as Nurse

Practitioner and Nurse Anesthetist roles as educators, researchers, and leaders. Role development varies between countries and geographical areas based on economic resources, available education, and governmental regulation and recognition. Admittedly, countries have varied levels of acceptance and incorporation into the healthcare system fiber. Throughout history, nurses have faced many challenges to their ability to practice to the full scope of their education, training, and competencies. These challenges continue today and hinder the advancement of nursing to its full potential in nearly all countries and all practice settings. It is our hope that this book will not only provide the reader with a detailed view of the contributions of Nurse Practitioners and Nurse Anesthetists to global health, but will also result in progression of the roles through removal of unnecessary burdens and barriers to practice, allowing patients access to essential healthcare services including increased access to anesthesia and surgical services.

New Orleans, LA
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Part I

The Role of the Nurse Practitioner



Evolution in Healthcare: The Journey from a US Demonstration Project to an International Concept

Barbara Sheer

A small body of determined spirits fired by an unquenchable faith in their mission can alter the course of history.

—Mohandas Gandhi

Introduction

The roots of the nurse practitioner (NP) movement are in public health nursing. This chapter will briefly review the history of public health nursing and the forces that led to the creation of the nurse practitioner role, the concept of the expanded role, and the geopolitical climate that made the nurse practitioner movement possible. It will discuss the challenges of the expanded role in terms of acceptance from nursing and medicine and explore the issues related to education, titling, scope of practice, reimbursement, and prescribing. It will also describe how the evolution of the role in the United States impacted the international movement and how networking fostered a global phenomenon.

History of Nurses in Public Health

Nursing has a long rich history. Florence Nightingale is known as the founder of modern nursing. She revolutionized care during the Crimean War in the mid-nineteenth century by establishing principles of cleanliness, light, rest, and nutrition. Nightingale, an early epidemiologist, utilized statistics and was able to quantify

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the differences that “trained nurses” made in decreasing morbidity and mortality during the war. After her experience in the Crimea, she established schools of nursing in the United Kingdom. Her model of training was followed in the United States when early schools of nursing were established [1].

Throughout history other notable figures have provided models of healthcare that had a significant impact on populations in need. In 1893 Lillian Wald took on social issues related to health with the development of the Henry Street Settlement. She hired a small group of nurses to visit the tenements and improve living conditions to make life better for the poor immigrants of New York City, living in deplorable conditions. The nurses provided basic care, nourishment, and education. Convinced that disease is caused by social issues such as poverty, overcrowding, and poor sanitation, the nurses took on social issues as the root cause of disease. This was the beginning of population health which Wald described as public health nursing. Care not only focused on disease but also on prevention of disease [1].

In rural Appalachia, access to healthcare was difficult if not impossible. Limited access resulted in a high morbidity and mortality rate for women and children. Mary Breckenridge recruited a group of midwives who went on horseback to care for women and children in their homes and in the community. Nurses carried supplies in their saddlebags, assisted in deliveries, and offered primary care services. This was the beginning of the Frontier Nursing Service founded 1925. The midwifery service later expanded to include primary care in the home, clinics, and later the hospital. This small group had a profound effect on morbidity and mortality of the population in a rural community [2].

Others had an impact on local, state, and even national levels usually caring for underserved populations, but the most profound impact has been the evolution of the nurse practitioner movement attributed to Dr. Loretta Ford and Dr. Henry Silver, which began as a demonstration project at the University of Colorado in 1965.

In the United States and elsewhere, it has long been recognized that all citizens do not have equal healthcare access, and many do not receive basic services such as prevention, screening, education, and other aspects of public health. Many times, this lack of services affects vulnerable members of the population, such as pregnant women and children. The national model of healthcare within the United States following the Second World War developed an increasing focus on hospital-based care. Physicians in the United States lobbied for the legal privilege to lead care teams and became increasingly elevated in their social and economic status. Physician-driven models of care based on pathology and procedures became ingrained in reimbursement designs. During the 1960s, national social movements such as Vietnam War resistance and the women’s rights movement caused more people to question prevailing models in many areas of life, not the least of which was access to basic healthcare services.

Early Development of Expanded Role

Although Loretta Ford RN, PhD, and Henry Silver MD are credited as the founders of the nurse practitioner movement, a forerunner of this project was established in 1958, at Duke University [3]. Thelma Ingles RN and Eugene

Stead MD, Chair of the Department of Medicine, developed the first masters clinical nurse specialist program in primary care. The program ended a few years later when it failed to gain National League for Nursing (NLN) Accreditation after several attempts. At the time the NLN leadership believed the program was medically oriented and that medical tasks performed by nurses were dangerous [4].

This was also a time when navy corpsman and medics were exploring ways to utilize their skills in a civilian capacity. Since nursing offered no avenue to build on previous experience, the Ingles/Stead Program was revised and became the first physician assistant program in the nation. The program was designed to expand the scope of practice and build on the skills of the corpsmen, to work under the direct supervision of a physician. The program was expanded to the northwest in 1968, as the Medex program sponsored by the University of Washington School of Medicine and the Washington State Medical Association. The program only admitted corpsman until 1974, when they began admitting nurses. Physician assistants working under the direct supervision of physicians became a new professional category of healthcare provider recognized nationally and internationally [5].

A Demonstration Project

Loretta Ford PhD and Henry Silver MD developed a demonstration project in 1965 at the University of Colorado. This was in response to a manpower shortage, maldistribution of healthcare resources, escalating costs, and a desire for nurses to expand their practices. The intent of the program was to provide nurses additional skills to provide quality healthcare to children who lacked access or affordable healthcare. The demonstration program was first offered as continuing education and was viewed as an extension of the role of the public health nurse. Dr. Ford had been a public health nurse in rural Boulder County where she found unmet needs in primary healthcare particularly for children. In many cases she was the sole provider. She realized that with advanced skill an expanded role for nurses was possible [6]. The program had modest beginnings and as a continuing education program did not need NLN accreditation. By 1967 Ford and Silver published articles in both nursing and medical journals [6]. They documented outcomes and were transparent in talking about the program to everyone that would listen and offered visits to anyone interested. The visits became so popular that they turned into conferences.

The concept met with resistance from nurse educators and physicians. The nurses and nurse educators believed that nursing education would be controlled by physicians and nurses would become “mini doctors.” Physicians initially feared lack of patient acceptance and later were more concerned about the competition. The initial outcome data indicated patient acceptance and that nurse practitioners could deliver quality primary care to infants and children.

Geopolitical Factors Facilitating Healthcare Revolution

There were many factors facilitating the success of the expanded role for nurses.

The healthcare system was undergoing significant changes. The Hill Burton Act of 1946 financed the building of new hospitals. Hospitals were becoming more specialized as new technology and treatments were available. Medicare and Medicaid passed in 1965 ensured the flow of money into hospitals. Nurses were becoming more specialized as critical care units evolved [7].

New technology required expanded skills and decision-making authority for the nurses in these specialized units. Hospital care became more specialized as new technology and treatments were developed. The Social Security Act Amendments of 1965 created the Medicare and Medicaid programs, two taxpayer-subsidized national health insurance entitlement programs, that supported and advanced the financial viability of the hospital-based model of care. At the same time, nurses were becoming more specialized as critical care units evolved [6]. New technology required expanded skills and decision-making authority for the nurses in these specialized units.

Medical schools were focusing on the need for high-tech specialty care. Fewer physicians were electing to go into primary care or general practice. Residencies for physicians were expanding to the benefit of hospitals, and the specialty practices ensured a more lucrative income for physicians. Between 1950 and 1970, the medical workforce increased from 1.2 to 3.9 million, and the national healthcare expenditures rose from 4.5 to 7.3% of the GNP [8].

The Kennedy administration took up the cause of community care, followed by President Johnson's Great Society and the war on poverty. Nationalized healthcare programs such as Medicare and Medicaid greatly increased the demand for healthcare services, leading to spiraling healthcare costs and provider shortages. The shortages were particularly acute in underserved populations. The concept of community healthcare in low-income areas as one-stop shopping became popular, but staffing these centers was problematic [8].

Society was undergoing social upheaval. The Vietnam War was very unpopular. As more young men were being drafted, there was growing discontent throughout the nation particularly on college campuses. A counterculture evolved protesting conventional values. It was a time of individual liberation and a fight for civil rights. Women's rights advocates like Betty Friedan and Gloria Steinem questioned the traditional roles of women. The chaos was a time of opportunity. Nurses became more empowered, and the time was right for change [8].

Expansion of Nurse Practitioner Programs

The initial success of the nurse practitioner program in Colorado led to the expansion of programs in the northeast. The Bunker Hill—Massachusetts General NP program began a short-term certificate, and around the same time, the Boston College-Harvard Macy program began offering masters-level graduate nurse practitioner programs [8]. With the expansion of the nurse practitioner role from

pediatrics to family, programs also expanded to fill that need with the first Family Nurse Practitioner program initiated at the University of Washington in 1971.

Another demonstration project funded by the University of California Davis trained nurse practitioners and family physicians together to practice in rural areas in California. Simultaneously, the Tuskegee Institute prepared a nurse practitioner and a technician to go to rural counties in a van to provide primary care to rural areas in the south. These projects demonstrated the value of the nurse practitioner in rural areas [9].

Programs and specialties continued to expand and become more specialized. The first adult nurse practitioner program to care for adults with chronic disease was developed at the University of Kansas [10]. Women's health programs were initiated at multiple levels from short-term certificate programs to master's degrees. Most of the initial nurse practitioners were educated at the certificate level. Many have basic nursing at the diploma or associate degree level. The differences in basic education would later create some challenges.

In another demonstration project, physicians and nurses at Hartford Hospital in Connecticut developed a 16-week program for nurse practitioners in obstetrics and gynecology [11]. The program was so successful they decided to additionally prepare family planning nurse practitioners.

The Planned Parenthood Federation of America also created in-house programs. The Planned Parenthood programs did not include prenatal content and were not recognized by many states. The graduates from the Planned Parenthood programs were employed in Planned Parenthood centers and functioned under specific protocols. Governmental funding in the form of Title X assisted the programs to become standardized, offering 16 weeks of intensive education [10].

When certification was established, Planned Parenthood programs were the last to require a master's degree. Many of the nurse practitioner providers were educated at the diploma and associated degree levels. Often, they were from the community and culturally competent. Salaries were lower and the nurse practitioners functioned under protocols. Requiring a master's degree presented an additional burden to find nurse practitioner providers for the programs, providing a needed service often in underserved areas and populations.

There were additional challenges to role expansion. Healthcare was changing in the hospital setting and primary care was being left behind. The roles of physicians and nurses and their relationship were also changing, challenging the status quo.

Challenges to Role Expansion

The paradigm of healthcare was changing. Hospital care was increasing in complexity, and physicians were gravitating to specialty practice and utilizing newer technology. Medical education focused on the diagnosis and treatment of disease. This focus on pathology was referred to as the curing part of healthcare. Nurses, by contrast, focused on care which included biopsychosocial issues. They took a more holistic approach to caring for individuals, families, and communities. Considering these trends, adding advanced assessment skills to a nursing curriculum seemed a

logical solution to expanding nursing practice and delivering primary care particularly to underserved populations. In that context, it was surprising that initially the major challenges came from other nurses and physicians. The public was accepting the new role and outcome studies were very positive. Becoming accepted was only the first hurdle for new practitioners, yet to come were issues of education, titling, scope of practice, reimbursement, and prescribing.

Nursing Opposition

Lack of support from nursing faculty at the University of Colorado came as a surprise to Dr. Ford. The initial nurse practitioner program was a demonstration project that enabled nurses with additional skills to expand their practice to provide care for underserved children. The program was practice oriented in the clinical area.

Tenured faculty were threatened by the change in status quo. Traditional research valued by universities for promotion did not involve being in the clinical area. The new role created a need for clinical and applied research being incorporated into the curriculum as another educational tool [12]. This change in the traditional paradigm created an uncomfortable situation for tenured faculty.

The nurse practitioner program was evaluated by a social scientist specialist in the theory of change and resistance. According to Dr. Ford, they utilized the theory of change to understand and develop strategies, logistics, and tactics to seek validation in what they were doing [12]. In response, Drs. Ford and Silver decided transparency was the best strategy. Rather than asking permission, they went to the Board of Nursing and the Board of Medicine to explain the program. At that time Dr. Ford was in fact on the Board of Nursing. Communication was key. They published, hosted events, and invited others to see what they were doing. According to Dr. Ford, they even had a dentist from New Zealand visit to explore the model for applicability to dentistry in New Zealand. Dr. Esther Lucille Brown, author of "Nursing for the Future," visited and proclaimed, "I have witnessed nursing in the finest." Dr. Ford said this only made things worse [12].

The reluctance of nurses to accept the expanded role may be seen from nursing's historical roots [13]. Since the Victorian era nursing has been predominantly a women's profession. Even Florence Nightingale whose contributions accomplished significant social and political changes frequently acted from the shadows of seclusion, as the sociopolitical environment was not ready for advanced advocacy from a woman. Instead of voicing her arguments directly, she became adept at convincing her influential male counterparts to help present her ideas to Parliament. In this way she was able to maintain the ladylike image of the Victorian woman as her proposals for healthcare reform in the United Kingdom were approved, and her school at St Thomas Hospital was funded.

Similarly, initial schools of nursing were based on an apprenticeship model and attracted lower-income women, while physicians were being educated in universities and claimed a higher status. These distinctions were apparent in both practice and social constructs. For example, in the hospital setting, the physician wrote orders, and orders were followed by nurses without question. Nurses were taught to

stand when a doctor entered the room or give up their seat [13]. These practices continued in some areas until the 1990s. As nursing moved from the apprenticeship model to the university level, nurses were better prepared with a scientific background, and the social divide was less apparent.

These patterns of behavior are described in detail by Stein who coined the phrase “the doctor-nurse game,” which is a concept that has persisted and been revisited many times over the years [13–15]. In this “game” the physician makes the decision, but the nurse who has direct contact with the patient has additional knowledge. The nurse therefore makes indirect suggestions for the care, in a way that the physician can explore additional information. The physician then makes the desired decision. This social dynamic allows the physician to remain in power, and the nurse does not have the responsibility for the action. The nurse is ultimately able to achieve the desired outcome without challenging authority. The patriarchal hierarchy was maintained.

The advent of the women’s movement in the 1960s was accompanied by a call for action to stand up and challenge inequality. While women across the nation were becoming more empowered and were fighting for equal rights, many in the traditional roles of teaching and nursing felt left behind in this revolution. While the leaders of the movement sought to balance the inequalities, they experienced resistance from the ingrained attitudes of the traditional nurses in leadership positions, which created conflict and cognitive dissonance. Nursing leaders who embraced the traditional role were comfortable and did not see a need for an expanded role that required additional responsibility and increased autonomy. They were not activists; they were comfortable with the status quo and did not want to become what some were calling “mini doctors.” Many viewed expanded practice with physical assessment as an abandonment of the nursing role in favor of a medical role. Nurse educators often echoed this belief since initial programs were taught and precepted by a combination of nurses and physicians. From the traditional perspective, nurse practitioners were moving into the medical domain and trying to be “mini doctors” without the benefit of medical school [11].

Resistance could also be seen in other ways that were not subtle. In some of the pediatric clinical areas where nurse practitioners and physicians were employed, nurses refused to work in collaboration with nurse practitioners [12]. Nurses weighed, measured, set up patients in an examination room, and gave immunizations and medications for the physicians. However, nurse practitioners were expected to complete the entire visit without any assistance. Practicing in the dual role of nurse and nurse practitioner, they were expected to do everything needed for the visit. Lack of support from staff nurses created a less nurturing environment for the pioneers who believed the new role was in fact an expansion of nursing [12].

Nurses who embraced the role saw the nurse practitioner role as an expansion of the role of the public health nurse and within the scope of nursing [15–17]. A definition of the role of the nurse practitioner was published by the American Nurses Association (ANA) in 1974 [18]. The role was defined as a registered nurse with advanced skill who provides direct care utilizing the nursing process, working in a collegial and collaborative relationship with other healthcare professionals. In this definition the nurse practitioner is first and foremost a nurse, practicing within their scope of practice.

Physician Opposition

The initial concept of the Ford-Silver program was to have masters-prepared nurses functioning in collaborative roles with physicians. The nurse practitioners would provide comprehensive well child care and manage common illnesses of childhood affording the physician time to care for more complex sick children [14]. They were to work in multiple settings including underserved areas. The nurse-doctor relationship was to remain the same with the physician in control.

The success of the program became a problem for the doctor-nurse relationship. Nurse practitioners moved into other specialty areas such as women's health and adult in-patient care, which physicians were previously seen as the only possible healthcare provider. Multiple studies were done on patient acceptance and quality of care [18]. The initial quality of care studies compared physicians and nurse practitioners on various components. Although many of the early studies were flawed, they overwhelmingly supported the quality of care was at least equal and, in some cases, better than the quality of care received by physicians. This opened the door for perceived competition.

A landmark study was conducted by the US Government Office of Technology Assessment (OTA) in 1986 [19]. The OTA study concluded that nurse practitioners, physician assistants, and certified nurse midwives provided cost-effective, quality care, improving access to care in rural areas. In this study the care provided by these groups was compared to that of physicians.

The balance of power was being altered [20]. Healthcare had a hierarchy, and that hierarchy was threatened by other providers. Physicians generally were more accepting of physician assistants. Most physician assistants were former corpsmen and functioned under the direct supervision of the physician. By contrast, nurse practitioners were viewed as separate licensed professionals, and this was perceived as a threat and infringement into medical practice [20].

Throughout the evolution of the nurse practitioner role, the American Medical Association (AMA) has allocated significant time and resources to inhibit expansion. Their tactics range from professional lobbying to vitriolic smear campaigns. One of the most egregious was the quack-quack media campaign suggesting that nurse practitioners were nothing more than quacks practicing medicine without a license. The Mattel toy company marketed a Nurse Quacktitioner doll in 2006, and despite outrage from nurses, they refused to recall it stating they had positive comments about the doll [21].

In 1985, the AMA voted to discontinue support of any federal funding to nurse practitioner programs to restrict proliferation of the programs. If they had succeeded, there would have been a significant impact on services in underserved populations [18]. The campaigns against nurse practitioners continued at the national, state, and local levels resulting in restricting nurse practitioners from practicing to their full scope of practice. These issues and the continuing struggle will be discussed later. One of the AMA's concerns was the lack of education of the new nurse practitioners (Fig. 1).

NURSE PRACTITIONER HISTORY

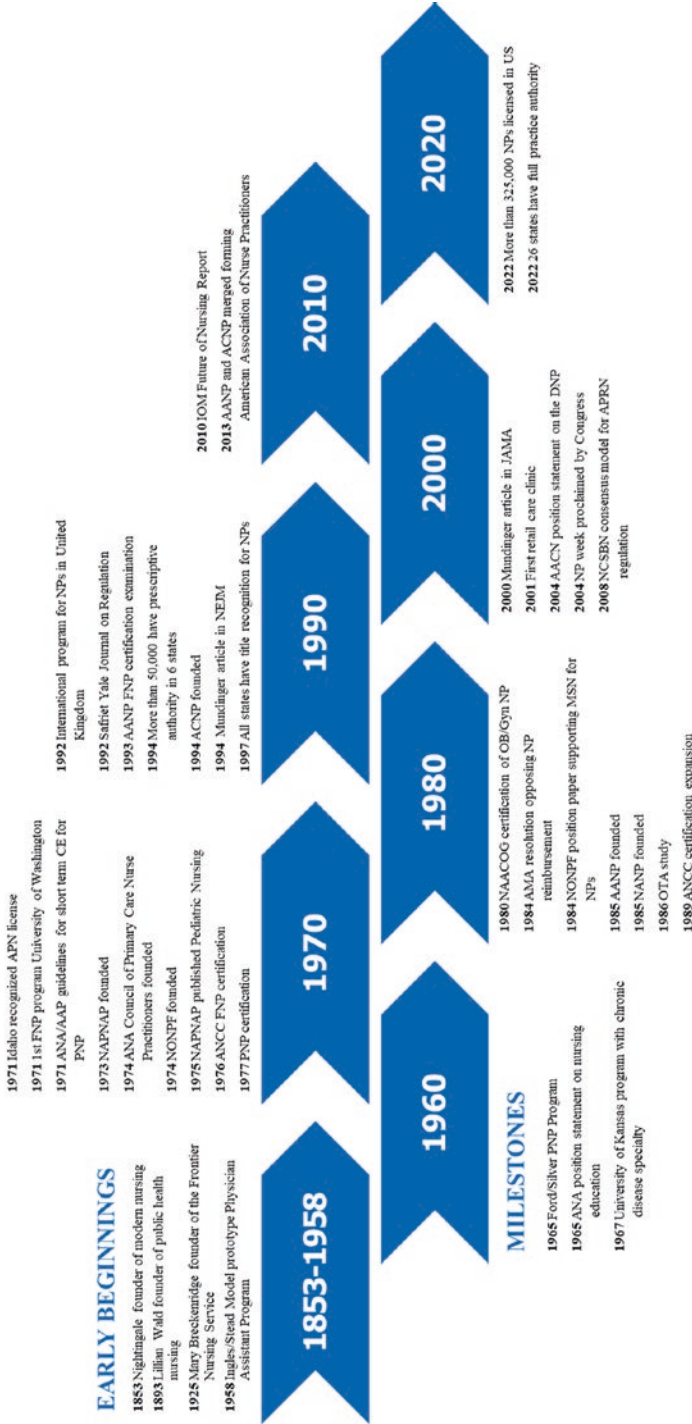


Fig. 1 Brief Historical Timeline

Education

The proliferation of educational programs and the lack of uniformity created significant issues. Most of the initial programs were at the certificate level, and the qualification for admission was to be a registered nurse (RN). Graduates of diploma, associate, baccalaureate, masters, and doctoral programs were admitted. Despite the broad range of educational background and varied skill levels at which these students entered the program, at the end of the nurse practitioner program, they all had the same qualification. They were nurse practitioners [8].

Lack of curricular standardization presented another issue. The programs that emerged at this time ranged from 4 months to 2 years with most being 4–12 months. By 1973, Pulcini reported that there were 65 programs in pediatrics, adult, and family specialties with only a few at the masters level [8].

In 1965, the American Nurses Association (ANA) issued its first position statement on the education of nurses, differentiating between technical and professional nurses. The minimum requirement for the professional nurse was at the baccalaureate level [10]. This statement, although controversial and debated for years, implied that nurse practitioner applicants needed a minimum of a baccalaureate degree for admission to any program [22].

The American Academy of Pediatrics (AAP) recognized that physicians could delegate portions of healthcare to properly trained individuals. In 1969, the AAP developed training and certificate guidelines for pediatric nurse practitioners (PNPs). The document was not well received by PNPs since it had no nursing input and suggested that the role was a delegated role rather than a professional nursing role [23].

In 1971, ANA and AAP jointly published guidelines on short-term continuing education programs for the Pediatric Nurse Practitioner/Associate (PNP/A). This was a collaborative effort to move toward a standardized curriculum. Having the ANA and AAP develop a curriculum provided an incentive for PNPs to begin to network. This was the beginning of a specialty group formalizing their commitment to pediatric healthcare [23].

To identify the PNP programs, the American Academy of Pediatrics published a list of programs which included the number of graduates, minimum prerequisites, length of training, and certificate or degree granted. In 1965, of the 64 programs listed, only 8 offered a higher-degree option [24].

In 1980, a National Task Force on Nurse Practitioner Curriculum funded by Robert Wood Johnson published “Guidelines for Family Nurse Practitioner Curricular Planning” [8]. This task force formed the groundwork for subsequent guidelines and the formation of the National Organization of Nurse Practitioner Faculties (NONPF) [9]. Formalized guidelines assisted in the move from short-term programs to the masters and post-masters level within university nursing programs.

The short-term programs housed in schools of medicine, hospitals, and university continuing education programs were gradually being replaced with university-based masters and post-masters programs. In 1984, the education committee of

NONPF created a position paper supporting nurse practitioner education at the masters level, and the committee laid the groundwork for competencies for NPs [25].

Later, the National Organization of Nurse Practitioner Faculties (NONPF) published the first edition of the National Directory of Nurse Practitioner Programs. The NONPF directory was utilized by prospective students and faculty and documented the rapid expansion of programs. By 1994 they published the sixth Edition, and most of the programs listed were at the masters or post-masters level [25].

NONPF published additional documents that continued the work of standardizing education: “Advanced nursing practice: Nurse Practitioner Curriculum Guidelines” (1990, 1995), “Domains and Core Competencies” (1990), “Curriculum Guidelines and Program Standards for Nurse Practitioner Education,” and “Criteria for Evaluation of Nurse Practitioner Programs” (1997). In addition, they continued to update the directory of nurse practitioner programs.

From the primary care outpatient beginnings to the acute care hospital settings, programs continued to expand. There were many discussions related to required clinical practice hours versus competencies. By 2000, preceptors were a mix of nurse practitioners and physicians. Care was increasing in complexity and programs accommodated by adding additional content. The master’s degree became the standard for entry into practice and a requirement for certification examinations [26]. At that time some states were requiring national certification for licensure. In 2004, the American Association of Colleges of Nursing (AACN) called for the transition to the Doctor of Nursing Practice as the entry level by 2015 [26]. In 2006, AACN published “Essentials of Doctoral Education for Advanced Practice Nurses,” and NONPF published the “Practice Doctorate Nurse Practitioner Entry-level Competencies.” The American Academy of Nurse Practitioners invited major stakeholders to a roundtable in 2008, to consider the issues of doctoral education [26].

Gradually masters programs were replaced with Doctor of Nursing Practice (DNP) programs. Although the DNP programs were expanding, the goal was not reached in 2015. A new goal for the doctorate as entry level is set for 2025. As the educational level was increasing, the National Council of State Boards of Nursing developed a consensus model for Advanced Practice Nurse regulation that combined the elements of licensure, accreditation, certification, and education (LACE) [25]. Doctoral education puts nursing on par with other healthcare professions. The American Association of Colleges of Nursing (AACN) reported in 2022 that 357 programs were enrolling students and programs were available in all 50 states [26]. Education moved from short-term certificate programs with variable curriculum content to the master’s degree and finally to the proposed required doctorate in 50 years. Specialty groups and organizations developed standards for their specialty. Faculty groups identified programs, published criteria, curriculum guidelines, and competencies with measurable outcomes. This was a long process, but finally through persistence educational programs shared consistency [27]. Another step was to assure individual credibility through certification.

Certification

Certification enhances credibility and validates knowledge by demonstrating clinical competence. The evolution of certification began with the National Association of Pediatric Nurse Practitioners (NAPNAP) in 1975. Certification was an option, and many PNs were conflicted about this exam because it was initially prepared by physicians [28].

The next certifying exam was offered by the American Nurses Credentialing Center (ANCC) beginning with the family nurse practitioner examination in 1976 and expanding to adult, family, pediatric, school, and gerontologic nurse practitioner examinations by 1989. The Nurses Association of American College of Obstetricians and Gynecologists (NAACOG) Certification Corporation now National Certification Corporation (NCC) developed examinations in obstetrics and women health [11, 29]. The initial exams were designed to measure excellence in practice rather than entry-level proficiency.

The American Academy of Nurse Practitioners Certification Board (AANPCB) began in 1993 with the family nurse practitioner exam and expanded to include adult and acute care NPs. Certification was evolving, and many states were beginning to require national certification for advanced practice licensure.

Requiring a master's degree for the women's health examination was debated for many years by NCC. Women's health content was expanding beyond family planning and prenatal care, and states were requiring a higher degree for licensure [11]. Reimbursement was often only available to masters-prepared nurses. By 2007 all certification examinations required a master's degree. Individual states were beginning to require national certification for licensure [9]. The National Council of State Boards of Nursing (NCSBN) concerned about the variation in the requirements for the certifying exams in the 1990s, required that all advanced practice nurse certification organizations develop examinations that were legally defensible and psychometrically sound [11].

Today most nurse practitioners are certified by AANP, ANCC, PNCB, or NCC and add a certification designation to their title [4]. While this represented a great advancement in the demonstration of clinical competence, the next challenge was a lack of uniformity in the titling, leading to confusion for consumers and nurses.

Titling

Titling has been confusing and inconsistent throughout the years. Titling for nurses utilizes educational level, specialty, certification, legislative definition, and honorary titles. There are many educational levels, specialties, certifications, and legal definitions leading to a plethora of inconsistent initials.

The University of Colorado demonstration project originally used the term public health pediatric nurse practitioner (PHPNP) which was shortened to pediatric nurse practitioner (PNP). As other specialties emerged, other titles emerged such as women's health nurse practitioner (WHNP) and acute care nurse practitioner (ACNP).

Legislation on the state and national levels defined nurse practitioners and physician assistants as mid-level providers, physician extenders, nonphysician providers, and allied health providers [13]. These terms also indicate a hierarchy rather than professional accountability. The terms were used in the literature and legislation but not in titling.

In 1996, ANA defined advanced practice registered nurses (APRNs) as nurse practitioners, nurse midwives, nurse anesthetist, and clinical nurse specialist to clarify credentials. Combining all advanced practice nurses into one category was not embraced by nurse practitioners who had been marketing the title “nurse practitioner” to the public for years. The public and legislators were beginning to understand the concept of nurse practitioner practice. At the same time, states were using advanced practice nurse (APN) as a designation; APN and APRN were being used simultaneously with the same meaning [28].

The National Council of State Boards of Nursing (NCSBN) in 2008 recommended the use of APRN in state legislative language combining the roles of the nurse practitioner, nurse midwives, nurse anesthetists, and clinical nurse specialist. This was in response to the lack of standardization of programs and the proliferation of specialties and subspecialties using different titles. In addition, certifying bodies did not have a standardized title to denote board certification [28].

Understanding credentials can be difficult for consumers. There are four sets of credentials that can be used: the educational level, BSN, MSN, DNP, and PhD; the licensure, RN, APN, APRN, CRNP, or other state designation; national certification which again varies with the certifying body such as BC for board certified from ANCC or C certified the designation from AANPCB; and honorary awards such as Fellow of the American Academy of Nursing (FAAN) or Fellow of the American Association of Nurse Practitioners (FAANP).

Recommendations on displaying credentials were posted by both AANPCB and ANCC [30]. Both AANPCB and ANCC agree that the highest degree be listed first (PhD, DNP) then licensure (APRN, ARNP, NP), national certification (BC, C) and honorary awards (FAAN, FAANP). If licensed in two states with different designations, there can be two sets of credentials, for instance, if Jane Doe was licensed in PA and DE, she would be Jane Doe DNP, CRNP, FNP-BC, FAANP in Pennsylvania, since the licensure is certified registered nurse practitioner, and Jane Doe, APN, FNP-BC, FAANP in Delaware, since Delaware licensure is advanced practice nurse. The profession is moving toward using APRN in all legislation but as of 2022 this has not occurred. Advanced practice nurses utilize more letters than any other profession.

The credentialing is confusing to both nurses and the public. Perhaps there is a lesson to be learned from other professions: physicians with the designation of MD, pharmacists using PharmD, and osteopaths with DO. These single designations are clear and make it easier for the public to identify the specialty. Now there is a new debate with the designation of the title “doctor.”

The use of the term “doctor” has ignited significant debate and has caused additional animosity between medicine and nursing. Nurse practitioners with a doctorate are doctors in their discipline which is nursing. Physicians firmly believe the

term doctor refers to a doctor of medicine and no other discipline. In 2006 the AMA published Resolution 211(A-06) titled “Need to Expose and Counter Nurse Doctoral Programs Misrepresentation” [31, 32]. The resolution contends that when nurse practitioners identify themselves as doctors, it creates confusion, jeopardizes patient care, and erodes trust in the patient-physician relationship.

Although this can be seen as another example of restraint of trade, the AMA is continuing to support legislation restricting the use of doctor to physicians. Six states have made it a felony restricting nurse practitioners from addressing themselves as doctor in a clinical area [32]. Nine states require the introduction to be followed with “I am a nurse practitioner.” The fact that this legislation exists demonstrates the power that medicine has in state boards and national legislation. This debate will continue as the number of advanced practice nurses are prepared at the doctoral level and their scope of practice continues to expand.

Scope of Practice

Nurse practitioners have expanded the boundaries of the essence of nursing. This has occurred at the state and national levels in a piecemeal fashion. An early statement on the scope of nursing practice from the ANA set the stage for struggles to come.

In 1955, the ANA described nursing as “care and council of the ill, the maintenance of health and prevention of illness, and the administration of medication prescribed by a physician.” In this statement they concluded that this did not include acts of diagnosis or prescription of therapeutic measures. This restrictive definition was problematic when it was published. The Indian Health Service nurses and the frontier nurses were already making decisions and providing care without the oversight of a physician [2]. The restrictive definition did not match the practice of the time.

By the 1960s healthcare in the United States was evolving. With the introduction of the nurse practitioner role, the ANA definition was outdated and did not allow for the changes occurring in practice. Under the direction of Health, Education, and Welfare Secretary Elliott Richardson, a committee to study extended roles for nurses was initiated. The committee concluded that the extended scope of practice was essential to providing equal access to care and recommended (1) a national certification and (2) development of a model practice law that could be applied to all states [2].

In response to the recommendations, the ANA added an addendum to the 1955 definition: “A professional nurse may also perform such additional acts, under emergency or other special conditions which may include special training, as are recognized by the medical and nursing professions as proper to be performed by a professional nurse under such condition, even though such acts might otherwise be considered diagnoses and prescription” [2]. This addendum recognized that in special circumstances, nurses with “special training” could diagnose and prescribe. Rather than clarifying the situation, this continued to blur the scope of practice for nurse practitioners and presented challenges over the years.

A scope of practice for pediatric nurse practitioners published by NAPNAP in 1983 identified assessment, diagnosis, and treatment of common acute conditions of children [33]. This definition of scope clearly indicated that the pediatric nurse practitioners were in fact diagnosing and treating children within their scope of practice. NAPNAP published standards of practice soon afterward which listed educational preparation and role parameters. NAPNAP later declined to participate in the ANA Task Force to develop a singular scope of practice believing NAPNAP standards were specific for the pediatric population.

The ANA Council of Primary Health Care Nurse Practitioners published their scope of practice in 1985, which acknowledged the evolution of knowledge and practice in primary care. This definition included assessment, diagnosis, planning, and intervention to include prescription of medication and consultation when appropriate. They concluded that the boundary of the scope of practice for nurse practitioners would expand with increasing education, experience, and social demand [34].

The major issues of the time were scope and standards of practice, quality of care, and cost-effectiveness. In response to the need for information, the American Academy of Nurse Practitioners developed one-page summaries to educate physicians, nurses, legislators, and the public. The documents published between 1989 and 1993 included “Scope of Practice for Primary Health Care for Nurse Practitioners,” “Standards of Practice,” “Documentation of Quality of Service,” and “Documentation of Cost Effectiveness” [35].

Ironically those who opposed the expanded scope of practice also continued to cite quality of care, access to care, and the impact on increased costs. The following studies are a sampling of studies addressing scope of practice, quality of care, and cost-effectiveness. The conclusions called for regulation to allow nurse practitioners to function to their full scope of practice.

A systematic review published in 2016 supported removing restrictive barriers for nurse practitioners at the state level as a viable strategy to increase primary care capacity [36]. Another study reviewing state nurse practitioner practice related to regulation and outcomes found full practice authority increased access without compromising quality of care [37]. Comparing the impact of access to care in rural populations, Neff [38] found nurse practitioners filling the gap. Access was increased when rural populations were required to travel less than 30 miles. The rural clinics were most often staffed by independent nurse practitioners.

In 2017, the Centers for Medicare and Medicaid Service Provider Utilization reported nurse practitioners were the largest providers of home visits making 4.4 million visits to 1.6 beneficiaries [39]. States with restrictive NP practice regulation had decreased utilization. In 1979, a review of 21 studies published in the *Annals of Internal Medicine* from the years 1967 to 1978 demonstrated nurse practitioners delivered equivalent care to that of physicians with no differences in outcomes [40]. This study was repeated by Brown and Grimes in 1995 with similar results [41].

Nurse practitioners were studied more than any other professional group. There were a few landmark studies that had a significant impact on the future of nurse practitioners. Of the four studies mentioned, one was authored by a nurse in the *Journal of the American Medical Association*, two were Institute of Medicine

Reports, and the fourth a regulatory review completed by the Dean of Yale Law School.

Landmark Studies

Several landmark studies are consistently cited in the literature. The Office of Technology Study in 1986 was an earlier study concluding that nurse practitioners, physician assistants, and certified nurse midwives provided cost-effective, quality care, improving access to care in rural communities [19].

In 2000, Mary Mundinger published a landmark study in the *Journal of the American Medical Association* (JAMA). This was remarkable in that a nurse was the primary author, and the study was a randomized trial of primary outcomes in patients treated by a nurse practitioner in an ambulatory care setting [42]. The study concluded that patients treated by the nurse practitioner or physician had the same degree of satisfaction and outcomes. This study was unique in that the nurse practitioners in the study were in an autonomous practice, having the same authority, responsibility, and patient population as physicians in comparable settings.

Crossing the Quality Chasm published by the Institute of Medicine (IOM) in 2001 had three recommendations for the healthcare workforce: (1) realign teaching to utilize evidence-based practice, (2) modify regulation and scope of practice to allow for innovative models of healthcare for efficient and effective delivery of care, and (3) examine the liability system to both support change and maintain accountability for providers [43].

The Future of Nursing also published by the IOM in 2010 envisioned “a transformed healthcare system providing seamless, affordable quality care that is accessible to all, patient centered, and evidence based, and leads to improved healthcare outcomes” [44]. The report had four recommendations that support nurse practitioners. The first was to ensure that nurses practice to the full extent of their education and training. This was a further call to action to expand the scope of practice regulation at the state level. The second recommendation was to improve education. This was already occurring with the development of doctoral programs and a commitment to require the doctorate as the entry into practice. The third recommendation was to provide opportunities for nurses to assume leadership and serve as full partners in healthcare redesign and improvement efforts. The final recommendation was to improve data collection for workforce planning and policymaking [44]. It is important to note that the report was published in 2010 when the Affordable Care Act (ACA) was passed in Congress, affording healthcare insurance to approximately 32 million uninsured individuals.

“Health care dollars and regulatory sense: The role of advanced practice nursing” published in the *Yale Journal on Regulation* presented an overview of scope of practice laws from a legal perspective [45]. The 1992 publication was sent to all the legislators and sold more copies than any other edition of the *Yale Journal on Regulation*. Barbara Safriet, the Dean of the Yale Law School, reviewed two decades of research on nurse practitioners. The evidence supported that APRNs particularly

nurse practitioners and nurse midwives provide comparable care at a lower cost than physicians. The review concluded that it was indisputable that nurse practitioners are cost-effective healthcare providers and recommended reducing restrictive barriers to allow them to practice to the full extent of their education and scope. She was a frequent speaker at NP conferences throughout the next decades consulting with many states on regulatory language.

Regulation

The primary purpose of regulation is to protect the public. Licensure for the professions is regulated by state boards which act independently from each other creating a lack of consistency from one state to another. Authority to diagnose, treat, prescribe, and bill for such services is defined by each state. Allowable practice in one state did not transfer to a neighboring state. This often requires multiple licenses and vigilance on the part of the nurse practitioner to understand the scope of practice within each state.

Physicians were the first healthcare practitioners to gain legislative recognition [45]. They defined their scope of practice in broad terms. One state defined practice of medicine as diagnosis, treatment, prescribing, or administering treatment to any human ailment physical or mental. With this broad definition, other professions had to carve out a scope of practice separate and distinct from that of medicine [45].

Nursing regulation began in the 1900s as voluntary registration. By 1930 licensure or registration was mandatory and required a certain level of education. The early regulation did not conflict with other professions. The ANA document in 1955 stated nurses were to care for patients and follow the orders of the physicians although, as previously stated, this did not reflect practices happening at the Henry Street Settlement, the Frontier Nursing Service, and Indian Health Service and was obsolete from the outset [20].

The roles of nurses universally were changing. As technology was increasing, tasks that had been medicine's domain were delegated to nurses. This was particularly apparent in the intensive care units (ICUs). Quick action may be the difference between life and death. The ICU nurses were, in fact, diagnosing and treating emergencies. They were starting intravenous lines, administering cardiopulmonary resuscitation (CPR), and performing other tasks traditionally performed by physicians. In response to the changing landscape, institutions and organizations granted privileges to nurses beyond the legislative and ANA scope of practice.

The advent of the nurse practitioner role in the 1960s called for significant changes in regulation. With the expansion of nurse practitioner programs, nurse practitioners were functioning beyond the boundaries of traditional nursing and the scope defined in nurse practice acts. A federal government report stated that functions of nurses were changing because of their competence to perform a greater variety of functions [44].

In 1972, Idaho became the first state to recognize nurse practitioners in statute and issued a separate license in addition to the RN license [46]. The advanced

practice license required an unencumbered RN license, advanced education, and direct supervision that could be accomplished by physicians, mentored practice, or peer review. The rules and regulations were jointly promulgated by the Idaho State Board of Nursing and the Idaho State Board of Medicine [46]. Any acts of diagnosis and treatment needed to be agreed upon by both boards leading to a variety of guidelines or protocols in practice settings.

In the 1990s more state boards were requiring national certification by a certifying body that could ensure that their examinations were psychometrically sound and legally defensible. This led the certifying bodies to seek accreditation for their examinations.

The debate for licensure and secondary licenses continued at the state level. Some State Boards of Nursing wanted to amend the “nurse practice act” by deleting terms such as “the prohibition of acts of diagnosis and treatment” or adding the term “nursing diagnosis.” Boards expressing this philosophy believed that advanced practice nurses were practicing nursing and should be governed by one license which needed to be amended to accommodate expanded practice. Other states were following Idaho’s lead in requiring a secondary advanced practice license. Each state functioned independently and, as discussed previously, utilized different titles for those attaining the secondary license. A nurse practicing in two states may have needed four licenses to practice: an RN license and an advanced practice license in each state. Faculty supervising nurse practitioner students in multiple states needed multiple licenses [45, 46].

Rules and regulations and governance varied in each state. Advanced practice nursing may fall under the jurisdiction of single boards or multiple boards. They may be governed by the Board of Nursing, the Board of Medicine, Board of Consumer Affairs, Joint Boards of Nursing and Medicine, or Advisory Boards composed of advanced practice nurses, physicians, pharmacists, and public members. The composition of the boards also varied from state to state. All of which means that nursing and advanced practice nurses could be regulated by professions and advisors who were not nurses. In the United States, nursing is the only group that could be regulated by another profession [45]. Some medical boards revised the Medical Practice Act to authorize physicians to delegate diagnosis and treatment to nurses with specific education. This put the advanced practice nurse directly under the physician and their discretion to delegate.

Safriet postulated that from a regulatory position, all state boards should seek uniformity by using a title such as advanced practice nurse (APN), requiring specific levels of education, national certification, which should be governed solely by the Board of Nursing. If other professionals were regulated by their own profession, it is a logical conclusion that nursing should be regulated by the Board of Nursing.

The variation of regulation in each state set the stage for professional turf wars. The Board of Medicine being involved in the regulation of nurse practitioners and other advanced practice nurses created a conflict of interest. It was within their purview to restrict practice to avoid competition.

A variety of stipulations restricted advanced practice nurses from functioning to the full extent of their education. These included collaborative agreements, written

guidelines, protocols, direct supervision, and a requirement for the physician to be located on premises. In rural practices the physician could be available by phone and not actually present. Occasionally rural practices were located on the border of two states creating a logistical nightmare for the nurse practitioner [46].

The regulation of professions is designed to protect the public; however, scope of practice was often determined by location. Nurse practitioners in private practices with physicians present were often required to collaborate and agree on a patient plan prior to discharge. This step took additional time in waiting for the physician and eroded patient confidence. It was less cost-effective if the nurse practitioner spent time waiting for the physician to collaborate and review the plan for every patient [46].

The same nurse practitioner in the same state practicing in a rural clinic would function independently and make decisions on a treatment plan without consultation. Most states made exceptions and allowed nurse practitioners to function more independently with specific underserved populations [46]. As a result, nurse practitioners found their place filling a need in rural areas, as well as the inner city. Nurses were innovative creating new models of care. They could be found in clinics, in inner-city housing projects, working with the homeless, HIV/AIDS populations, and others in need. Nurses told their stories about going to where the need was greatest. This could be a watering hole to meet with an indigenous population reluctant to seek care or equipping a van to travel to isolated communities in Appalachia.

In a 60-minute segment entitled “The nurse will see you now,” Morley Safer highlighted the differences of the scope of practice in different settings [47]. Columbia University began a nurse-managed center on Madison Avenue, an affluent area of New York City. This created outrage from the American Medical Association. Their concern was quality of care. They felt nurse practitioners were a cheap substitute for medical care. The president of the AMA Nancy Dickey stated, “if nurses wanted to practice medicine they should go to medical school if not they needed to practice under the supervision of a physician.”

The segment contrasted this concern by visiting two well-established rural health centers operated independently and run by nurse practitioners. Nancy Dirubbo and Mona Counts had long-standing practices in rural New Hampshire and Appalachia, respectively. Some of the patients in these practices had never seen another provider. Safer concluded that if a nurse practitioner is competent to practice in rural and underserved urban settings, they are competent to practice in all settings. It was only when the nurse practitioners moved into an affluent area that quality became a concern.

Physician’s attitudes have changed over the years from early support to mounting campaigns against the legislative expansion of nurse practitioner practice that would allow full practice authority.

A review of medical literature through the years 1967 to 1982 illuminates a shift in attitudes [48]. The first nurse practitioner program was designed to fill a need in rural areas and make a significant difference in the lives of children. Well-child exams were performed, and acute and chronic illnesses in childhood were managed

by experienced nurses with additional assessment skills. This was an extension of the role of public health nurses. A benefit was seen by all. Access was increased and physicians could focus on children needing more specialized care. Private practice physicians saw the new role as a way to expand their practices and see additional patients. The nurses were functioning under existing practice acts. Initially there were a limited number of nurse practitioners and physicians who worked in collaborative practices. They saw the new role as beneficial for both the patients and the practice. Quality of care was not an issue. There was agreement that most of the pediatric primary care could be managed by nurse practitioners. Prescribing was not part of legal practice, but nurses had been responsible for immunizations as a nursing role. In some instances, nurse practitioners were prescribing medications. State licensure laws did not present an obstacle to practice, and there was no mention of practicing medicine without a license.

In 1978, the IOM recommended that licensing laws should authorize nurse practitioners to provide services including diagnosis and provide medication when appropriate with the supervision of physicians [49]. The American College of Physicians supported the need to amend laws but reiterated that the ultimate responsibility for diagnosis and treatment remained the responsibility of the physician. Some progressive physicians like Dr. Barbara Bates saw the roles of the physician and nurse being different but complementary and understood the traditional roles of the physician and nurse were being challenged.

The literature in the 1960s and 1970s was positive and saw the new role as a solution to access to care. Nurse practitioners were accepted and utilized to provide needed services particularly to underserved populations. If the nurse practitioner functioned in a collaborative practice with physician oversight, they were cost-effective, delivered quality care, and were a great asset to providing primary care to those in need. The relationship became strained when reimbursement for nurse practitioners and advanced practice nurses was possible [48].

Reimbursement turned the tide from acceptance to competition. The traditional relationship between physicians and nurse practitioners was being tested and undergoing a significant change. Physicians saw this as a challenge to their domain and began actions to save their exclusive domain in healthcare. Physicians had influence with insurance companies and advocated that nurse practitioners not be reimbursed. This would restrict practice regardless of scope of practice.

The AMA declared war on expanded scope of practice regulation for nurse practitioners and other nonphysician healthcare providers. For over 30 years, the AMA has monitored state and federal legislation. As part of their advocacy, their goal is “to safeguard the practice of medicine opposing nurse practitioner and other nonphysician attempts to inappropriately expand their scope of practice” [49]. Since 2019 they have been able to prevent over 100 pieces of legislation from being enacted. The group has awarded more than two million dollars from the Scope of Practice Partnership to prevent legislation expanding scope of practice for nurse practitioners and other nonphysician providers. More than 105 national, state, and specialty medical organizations are members. The focus was no longer on the distribution of equitable healthcare for all populations in a

cost-effective manner by utilizing the best provider. The new focus was about saving the medical domain. When physicians began to understand the ramifications of reimbursement and prescriptive authority, they obstructed the expansion of nurse practitioner service in any way they could. Noncompete clauses were added to contracts assuring that if the nurse practitioner left the practice, she could not practice within a 50-mile radius to assure that patients would not follow the nurse practitioner to another site.

In 2011, the Federal Trade Commission evaluated laws and state policies restricting the practice of nursing and found that stringent requirements for physician oversight may be considered anticompetitive. The restrictions served to protect the interests of the medical profession rather than the best interests of the consumers [50]. Reimbursement and prescriptive authority were additional challenges to nurse practitioner practice.

Reimbursement

Receiving reimbursement for services provided by nurse practitioners has been an uphill struggle over time. There is a complex web of provider eligibility requirements that vary from state to state and within a state. The rules are ever changing, and the amount of reimbursement varies from 70 to 100% of the physician rate for the same service. Reimbursement depends upon many factors such as the state, regulation, and type and location of practice. Medicaid, Medicare, third-party insurers, and managed care organizations all have different rules, and often the rules vary within the state. Reimbursement options do not support nurse-managed centers or nurse-owned practices [51].

The first federal legislation allowing reimbursement was an amendment to the Social Security Act in 1974. This amendment included nurse practitioner services under Medicare and Medicaid [51].

In 1977, the Rural Health Clinic Service Act allowed Medicare reimbursement for nurse practitioners practicing in federally designated rural and underserved areas [51]. Medicaid reimbursement followed, which included all family and pediatric nurse practitioners by 1989. In 1997, under the Balanced Budget Act, signed by President Clinton, nurse practitioners could bill directly for Medicare services in any setting [51, 52]. Rates varied from 75 to 100% of physician reimbursement, depending upon the state. A portion of Medicaid benefits are derived from managed care insurers [52]. The managed care insurers set the policies as to who and who cannot receive payment. If managed care insurers elect not to reimburse for nurse practitioner services, there is no reimbursement. Therefore, the policy directly restricts nurse practitioner practice. The value of nurse practitioner services becomes dependent upon the state, the scope of practice, and the ability to be reimbursed for the service and not for competence and the ability to provide quality cost-effective care.

Managed care organizations often require the listing of a primary care provider. To be listed as a provider or part of a team, the nurse practitioner needs to be

credentialed by the managed care organization. The credentialing process is not standardized and may vary within a state. States with more restrictive regulations requiring supervision are less likely to attract nurse practitioners.

Research has demonstrated that states with full scope of practice and reimbursement at 100% of the physician rates accept more Medicaid patients. They are more likely to be in rural and high-poverty areas [50]. Patients in these areas were more likely to be seen by nurse practitioners.

Under Medicare nurse practitioner services are reimbursed at 85% of the physician rate. If billed under the physician's provider number, the practice can receive 100% reimbursement for the service. This is called "incident to" billing and there are restrictions to this billing. The physician must be on site and needs to see the patient for the first visit, any new complaint, and at least once a year. This is counterproductive in practices where patients are routinely seen on an annual basis. With incident "to billing," nurse practitioners become invisible because they are not providing services under their own provider number. Many practices discouraged nurse practitioners from applying for their own provider number because the revenue would be 85% vs 100% [52].

Managed care organizations often will not contract with nurse-managed centers. Nurse-managed health centers (NMHCs) serve diverse populations and provide a safety net for healthcare in their communities. Funding becomes a significant challenge depending on state regulations, and the interest of third-party insurers. Most insurers do not support nurse-managed centers or independent nurse practitioner practices, forcing those centers to rely on grants and philanthropy which may not be sustainable [53]. The NMHC centers are not-for-profit and usually have a sliding scale for payment. In 2010, the 200 NMHCs in operation had an estimated two million encounters per year. If they operated to capacity, the cost would be less than other care in the same geographical area. A barrier to these centers is the inability for insurers to credential nurse practitioners limiting the ability to be reimbursed. Of the few nurse practitioners that are credentialed in NMHCs, only half were reimbursed the physician rate [54, 55].

Reimbursement is more of an issue in some states than scope of practice. Reimbursement is an inconsistent patchwork of ever-changing rules and regulations. The current system does not support nurse-managed centers or independent nurse practitioner practice which has proven to be cost-effective with appropriate numbers of patients enrolled. The current systems of Medicare, Medicaid, and third-party insurers create an unequal field when nurse practitioners cannot be credentialed. Some states have enacted "any willing provider" legislation. This allows any willing provider with appropriate credentials to provide a service. Unfortunately, not all "any willing provider" legislation included nurse practitioners. Reforming reimbursement schemes to allow nurse practitioners to receive 100% of the physician reimbursement for the same service and credentialing nurse practitioners on reimbursement panels would be a step in more equitable payment schemes [55].

Even with the Affordable Care Act, over 28 million or 8.6% of the population remain uninsured. Nurse practitioners have proven they can fill the gap and could continue to offer alternative solutions for healthcare delivery. The issue of reimbursement needs to be resolved, or the United States will continue to have the some of the worst healthcare outcomes among developed nations.

Nurses continue to find ways to deliver healthcare to underserved populations despite restrictive legislation and practices. Prescriptive authority is another restriction that has been addressed in a fragmented manner. Prescriptive authority not only varies from state to state and setting to setting but also includes specific drug classes that can be prescribed or are prohibited.

Prescriptive Authority

Prescriptive authority is paramount to nurse practitioner practice and is granted by state legislation. Pearson, in an annual update, defined prescriptive authority in three categories: dependent, independent, and none [56]. These annual updates have tracked the progression of states expanding prescriptive authority to nurse practitioners from very few states in 1990 to all 50 states and the District of Columbia having some form of prescriptive authority by 2020.

Prescriptive authority can be acquired in a variety of approaches [57]. Statutory authorization is through a nurse practice act, pharmacy law, a medical practice act, or a combination of the above [57]. This allows the greatest independence. A second method is an opinion rule which is an interpretation by an attorney general. This can be challenged. The third method is through delegation under the authority of a physician. This usually includes a written agreement between a physician or institution and the nurse practitioner and needs approval of both the Board of Medicine and the Board of Nursing. The final option is under a Board of Pharmacy waiver which can be withdrawn any time.

In 1983, 43 states had statutory or regulatory references to advanced practice nurses [58]. Of these 24 had an “additional acts” clause in the definition of nursing practice, and 24 had a specific section in the law which addressed advanced practice. Six states required a master’s degree for a clinical nurse specialist, and three states required a bachelor’s degree for nurse practitioners. Ten states had advisory committees to assist with advanced practice rule and implementation. In 27 states prescriptive authority was regulated by the Board of Nursing, and in 16 states it was regulated by the Board of Health, Board of Medicine, or Joint Boards of Medicine and Nursing.

In 1996, all states except Illinois and Oklahoma had statutory authority [56]. In the Pearson Report, Georgia is listed as having prescriptive authority with some degree of physician oversight; however, in more recent literature, Georgia is listed as the last state to attain prescriptive authority in 2006. Perhaps it’s a matter of degree.

In the early days, there was a requirement to be licensed or certified as an advanced practice nurse in the state, and many were beginning to require proof of a recent pharmacology course [56].

Requirements differed from state to state, requiring collaborative agreements, written protocols, a formulary, and a reverse formulary that listed drugs excluded. Washington and Alaska were the first states to allow independent prescribing.

Nurse practitioners were creative in prescribing and providing medications for their patients. Even when they had regulatory authority to prescribe, there were still barriers in place such as pharmacies not honoring the prescriptions. There were unique options that were utilized. Nurse practitioners or staff nurses would call the prescription into the pharmacy under the physician's name or the nurse practitioner's name if accepted. Within a facility, prescriptions could be pre-signed by the physician, signed with physician's name, cosigned with the nurse practitioner and physician name, or requested for the physician to sign for each individual patient [59]. Another way that facilities handled prescriptions was to fill them in-house. Planned Parenthood utilized protocols and stocked medications that could be distributed.

The following stories demonstrate how nurse practitioners in three different settings, within one state, collaborated with colleagues to utilize creative solutions for prescribing.

Real-Life Stories by Nurse Practitioners

Academic Medical Center

Nurse practitioners related interesting stories about how prescriptions were handled in different clinics and offices. In one hospital, the outpatient nurse practitioners were given prescription pads pre-signed by the department director to use in their offices. One day an NP ran out of the pre-signed prescriptions and went to the director's office and requested additional prescriptions. Realizing she had forgotten something, she went back to the director's office to find the secretary signing the prescription pad with the physician's signature. The nurse practitioners realized that they could not sign the prescriptions, but the secretary could.

Private Pediatric Group Practice

In another scenario a pediatric nurse practitioner was hired into a pediatric practice group. The group was assured that the PNP had the legal right to sign prescriptions. The group, however, decided that they were more comfortable leaving signed prescriptions to be filled out. After each session the physician and the PNP did chart review. About a month later, one of the pediatricians asked if the PNP could co-sign the prescriptions so if the pharmacy had a question, they would know who had prescribed the medication. A little later at a group meeting, the pediatricians asked if the PNP was comfortable signing her own name without a co-signature. On the first day of officially signing the prescriptions, there was a knock on the door to announce the pharmacist was on the phone. Armed with the nurse practice act, the PNP

answered the call ready for the defense. The pharmacist was just calling to see if the drug could be substituted for a lower-cost antibiotic. There was no issue about the signature nor was there ever an issue in the community.

Primary Care Community Center

A nurse practitioner was asked to cover pediatric services at a community primary care center during the summer. The pediatrician was going on leave and the center decided to hire a nurse practitioner. This was the first nurse practitioner to work without a physician in the clinic. The nurse had prescriptive privileges under the rules and regulations of the nurse practice act. At that time some of the chain pharmacies were refusing to honor nurse practitioner prescriptions. The director of the center discussed the issue with a local independent pharmacist, located close to the clinic, and he agreed to honor all nurse practitioner prescriptions. Patients were told the local pharmacy would honor the prescriptions, but they were free to go any pharmacy they wished. If they encountered a problem, they were to have the pharmacy call the clinic, and a physician would write the prescription. The local pharmacist was delighted, at the increase in business, patients received their medications in a timely fashion, and there were no calls to the clinic about problems with prescriptions. The whole situation was considered comical because a staff nurse routinely called in the prescriptions rather than the physicians, and the call ins were always filled without question.

These are just three stories of how nurse practitioners were able to overcome barriers to deliver care to the community. Today, it may seem difficult to believe that some physicians were willing to pre-sign prescriptions, knowing that an NP would fill in the medication order. This is widely considered an illegal act, but it is an act that was undertaken by some physicians to find a way to deliver cost-effective care to an underserved populations.

One of many outcome studies completed in 1998, evaluating the effectiveness of APN prescriptions in 25 primary care sites in Louisiana, concurred with previous findings that APN prescriptive authority was beneficial to the patients [60]. Of particular interest in this study, participating physicians who worked with nurse practitioners supported nurse prescribing. This was in opposition to the stance taken by the Board of Medicine in the state. Hence, in this instance physicians who had direct contact with the nurse practitioners were supportive of nurse practitioner prescribing, while those with no contact were not as supportive or opposed nurse practitioner prescribing.

Nurse practitioners have been committed to clarifying prescribing in each state, but this occurred again in piecemeal fashion. Changing legislative laws at times required compromise. This may be in the form of a formulary, collaborative agreement or oversight by a joint practice committee. Sometimes it entailed only prescribing certain classes of medications. In one state the nurse practice act was expanded to grant prescribing authority but conflicted with pharmacy law which listed authorized prescribers and excluded nurse practitioners. Therefore, nurse practitioners could legally write prescriptions, but the pharmacist was not authorized to fill them.

Nurses were persistent if a legislative bill did not get passed, they continued to lobby and had it introduced during another session. The AMA continues to oppose legislation, but through networking and persistence, nurse practitioners have prevailed in most states. In dealing with persistent challenges at the state and national levels, nurse practitioners realized the need for networking and political actions. The ANA was not allocating significant resources to legislation addressing the expansion of nurse practitioner boundaries at the state and national levels. In response specialty organizations proliferated creating some dissonance.

Lack of Unity: The Formation of Nurse Practitioner Organizations

Box 1 Nurse Practitioner Organizations

	Organizations
AACN	American Association of Colleges of Nursing
AANP	American Academy of Nurse Practitioners/American Association of Nurse Practitioners
AANPCB	American Association of Nurse Practitioners Certification Board
AAP	American Academy of Pediatrics
ACNP	American College of Nurse Practitioners
AMA	American Medical Association
ANA	American Nurses Association
ANCC	American Nurses Credentialing Center
CCNP	California Coalition of Nurse Practitioners
ICN APNN	International Council of Nurses / Advanced Practice Nursing Network
NAACOG	National Association of American College of Obstetricians and Gynecologists
NANN	National Association of Neonatal Nurse Practitioners
NANPRH	National Association of Nurse Practitioners in Reproductive Health
NAPNAP	National Association of Pediatric Nurse Practitioners (originally National Association of Pediatric Nurse Associates and Practitioners)
NCC	National Certification Corporation
NCGNP	National Council of Gerontological Nurse Practitioners
NCSBN	National Council of State Boards of Nursing
NLN	National League for Nursing
NPACE	National Association of Nurse Practitioners Continuing Education
NYSCONP	New York State Coalition of Nurse Practitioners

Nurse practitioners throughout the United States were pushing the boundaries of practice. Their numbers were increasing, and there were questions emerging regarding educational programs, scope of practice, reimbursement, and prescribing. There was a need to network since practice was expanding beyond the existing legislation.

The ANA was not an early supporter of nurse practitioners, but in 1972, they added the Council of Primary Health Care Nurse Practitioners (CPHCNP), to meet additional needs of emerging roles. The council failed since it was not able to meet the growing needs of nurses in specialty practices. The emergence of the new organizations resulted in loss of membership [61]. ANA was no longer the voice of all nurses.

Over the next few years, nurse practitioner specialty organizations proliferated both on the state and national levels. A group of pediatric nurse practitioners met informally, organized, and formed the National Association of Pediatric Associates and Practitioners in 1973. They were invited but declined to join an ANA council under the maternal-child division, preferring to be independent.

Between 1978 and 1984, the California Coalition of Nurse Practitioners (CCNP), the National Organization of Nurse Practitioner Faculties (NONPF), the National Association of Nurse Practitioners in Reproductive Health (NANPRH), National Association of Nurse Practitioners Continuing Education (NPACE), the New York State Coalition of Nurse Practitioners (NYSCONP), the National Council of Gerontological Nurse Practitioners (NCGNP), and the National Association of Neonatal Nurse Practitioners (NANN) were formed [20].

In a call for unity, six national nurse practitioner organizations sponsored a national nurse practitioner forum called the “Coalition for Practice: Future Markets, Future Models.” The meeting was attended by 310 nurse practitioners who met to develop a framework to unify nurse practitioners. This became known as the “Chicago Meeting of 1985.” What emerged was the formation of the American Academy of Nurse Practitioners (AANP) to represent family nurse practitioners and the National Alliance of Nurse Practitioners (NANP). The Alliance was an organization of organizations with three major goals to (1) monitor legislative and political activities, (2) develop marketing and public relations materials, and (3) increase communication to provide a rapid response to legislative and other issues needing immediate attention and a unified voice [62, 63].

The Alliance met twice a year with rotating sponsorship of the meeting. During its existence several fact sheets were published and distributed for the political agenda, and each year all the member organizations agreed upon a legislative agenda. This enabled all organizations lobbying to bring the same message to the US Congress. NANP published “A Vision for the Year 2000” and several other position papers including a position on certification and one on the acute care nurse practitioner [62].

In response to the need for increased lobbying and setting a political agenda, NONPF sponsored an invitational leadership summit in 1993. At the end of the summit, a SWOT analysis (strengths, weaknesses, opportunities, and threats) team was formed to further the agenda. The result was the formation of the National Nurse Practitioner Coalition (NNPC) which shortly changed its name to the American College of Nurse Practitioners (ACNP). Their mission was to focus on legislative issues and lobbying. In 2013 AANP and ACNP merged forming the American Association of Nurse Practitioners.

From a historical perspective, significant time and energy was spent in organizational activities. Nurse practitioners through their networking and organizational leadership have been able to make great strides. Unfortunately, this has fallen short of a unified coordinated effort. The nurse practitioners from the United States shared this part of our history with other nations hoping to avoid some of our shortcomings. Having a unified voice to speak for all nurse practitioners would provide a powerful platform for change.

The University of Colorado held an annual continuing education conference at the Keystone Conference Center. Leaders of the national organizations were invited to become conference advisors and present at a keynote forum. The forum provided a platform to discuss organizational agendas, network, and have an open discussion on current events related to nurse practitioner practice and regulation.

International Collaboration

In 1991 Barbara Stilwell from the United Kingdom (UK) was an invited participant at the Keystone Conference. She had attended a nurse practitioner program in the United States and with a colleague, Barbara Burke-Masters, initiated the role of the nurse practitioner in the United Kingdom working with homeless and inner-city populations. Based on their experiences, there was support for the development of the first nurse practitioner program at the Royal College of Nursing (RCN) in London. The program admitted 20 students who were funded to attend the Keystone Conference in the following year. During their visit to the United States, the new UK nurse practitioners were able to visit practices of experienced nurse practitioners. The idea of hosting a UK/US conference in London emerged. The purpose of a joint conference was threefold to (1) highlight the role of the nurse practitioner as an international phenomenon, (2) support the UK movement with credible speakers from the United States and the United Kingdom, and (3) provide a forum for networking and interactions [64].

In November 1992, Dr. Ann Smith from the University of Colorado and Dr. Barbara Sheer from the Keystone Conference Advisory Board met with Barbara Stilwell, Mark Jones the community health advisor for RCN, Penny Lawson a new graduate, and Dr. Geoff Roberts a physician supporter, to plan the first international nurse practitioner conference. The conference took place at the Café Royal on August 6–8, 1993, hosted by the Royal College of Nursing and the University of Colorado Health Science School of Nursing, with 350 international participants in attendance. Many in attendance from other nations desired information on the new role. Dr. Loretta Ford gave an inspiring keynote address which was met with an enthusiastic response. With the success of the conference, the Royal College of Nursing decided to continue the conference on an annual basis.

The following year the Keystone Conference led by Ellen Lemberg celebrated the international community by inviting international nurse practitioners representing 35 countries including the United Kingdom, Canada, Australia, New Zealand, Spain, Yemen, Swaziland, and South Africa. The nurse practitioner movement was gaining momentum internationally. A few of the international participants were nurse practitioners who were working within the confines of US Embassies.

To continue the momentum, annual conferences were hosted by the Royal College of Nursing, the University of Colorado, and the American Academy of Nurse Practitioners. The conferences were held in London; Edinburgh, Scotland; Birmingham, England; and Melbourne, Australia. Each conference attracted representatives from additional countries. It was decided to begin to support other nations

with developing roles to host the conferences. This would increase visibility in those nations and add credibility to the developing role.

There were commonalities in the global role development regardless of the nation or region. Universal issues included role definition, scope and nature of practice, educational preparation, regulatory mechanisms, and healthcare policy. At each conference the progress of each nation was shared, strategies discussed, and national leaders supported. By 1996, the group recognized a need for an ongoing communication network. The International Council of Nurses (ICN) represented nurses globally, but there were several issues with membership restrictions.

The ICN was not a direct individual membership organization. At that time ICN was an organization composed of one national organization from each nation. In the United Kingdom, the member organization was the Royal College of Nursing (RCN). In the United States, the member organization was ANA. The initial conferences were supported by RCN and AANP, a nonmember organization. The collaboration presented a problem for ICN as the conference was moving into more countries. Another issue was that many of the developing nations did not have membership in ICN. If a network was to be formed, it needed to be inclusive not exclusive with individual, not organizational, members.

With persistence and assistance from Fadwa Affara the ICN representative, an agreement was negotiated. In a departure from existing policy, the ICN allowed a unique structure. The nurse practitioner network would be established under the umbrella of ICN with individual membership. In 1999, at the ICN Centennial Congress in London, a forum was held to clarify the nature of advanced practice and describe the nature of the network. A survey was developed to identify advanced practice roles throughout the world [65].

An effort to develop a definition of the role was problematic due to diversity of cultures and inconsistencies in language, titling, scope, education, and regulation throughout the world. Consensus was reached on the title "International Nurse Practitioner/Advanced Practice Nursing Network" (INP/APNN). The network was launched at the eighth international conference in San Diego on October 1, 2000. The development of the network served as a prototype for ICN networks. Individual membership is free to all nurse practitioners, advanced practice nurses, policymakers, and others interested in the expanded role. It provides updated information on research, healthcare policy, and practice.

Many US and UK nurse practitioners provided early leadership for the group including Sue Cross, Dr. Madrean Schober, and Dr. Rosemary Goodyear, as chairs of the core steering group. Other US representatives chaired the subcommittees and participated in the development of the committees. Leaders from other nations with established roles added international representation. The network has provided guidance in suggesting a master's degree as the entry level. Many nations lacked an educational infrastructure to provide education at this level. This early definition allowed developing nations to set a goal for future direction. Revisions were made as practice around the world continued to evolve.

In 2006, Schober and Affara identified trends and issues in 24 countries. The issues included titling, scope of practice, competencies, diagnosis, and prescribing

[66]. This was the first comprehensive look at advanced practice around the world and provided a valuable resource for all nations.

The expansion of nursing was following global trends. In 1990 the World Health Organization (WHO) issued a goal of “health for all” which focused on equitable resources for people of all nations. Previous definitions of health as the absence of disease or infirmity were replaced by a goal defining health as a state of complete physical, mental, and social well-being and a right of all people [66].

Following the establishment of the WHO goal of “health for all,” the United Nations developed the “Millennium Development Goals” and later the “Millennium Sustainable Goals.” Many of these goals are within the scope of nursing. The eight millennium goals are to (1) eradicate extreme poverty and hunger, (2) achieve universal primary education, (3) promote gender equality and empower women, (4) reduce child mortality, (5) improve maternal health, (6) combat HIV/AIDS and other diseases, (7) ensure environmental sustainability, and (8) develop global partnerships [68].

Nursing represents the largest global healthcare workforce [67]. Throughout the world nurses have made a significant impact in promoting gender equality, reducing child mortality, improving maternal health, and combatting diseases such as HIV/AIDS and other diseases in underserved populations. Nurses with or without additional education and titling have filled the roles of caregiver in the community functioning in the interest of public health. They have gone door to door providing services for women and children, staffed clinics in villages for HIV/AIDS and malaria, provided immunization clinics, and have educated the public on health promotion and disease prevention.

The concept of expanded practice was spreading within the context of the individual nation’s healthcare system. Each healthcare system offered unique needs and opportunities. The nurse practitioner movement responded to the needs and opportunities in the nation. In the United Kingdom, the initial focus was on primary care. The Netherlands began in acute care. They were experiencing a shortage of nurses in acute care, and patients needing transplants were being sent to other nations for treatment. The first program developed by Dr. Petri Roodbol addressed the need for expert acute care, led a higher status for nurses, and decreased the shortage [69].

Thailand took a different approach and began with regulation rather than education. They had support and were able to pass regulation to add 4000 advanced practice nurses in 7 years, to care for underserved rural populations. Once the regulation was established, they were able to develop the educational infrastructure. Other nations, including Canada, Australia, New Zealand, South Africa, and Botswana, were also developing more sophisticated educational programs for nurse practitioners [69].

The network has continued to expand and support the development of nurse practitioners and advanced practice nurses throughout the world. There are over 100 countries in the NP/APNN network. Globally, the educational level for advanced practice nursing is increasing, with some nations requiring a doctorate. Boundaries are expanding and regulations are continuing to be updated. Networking

has made a difference in offering nurses the ability to strategize their next steps. Nurses of the world have joined together to provide cost-effective accessible care to all. They continue to make a difference in reaching the Millennium Development and Sustainable Goals. The transformation will take years but will be worth the effort.

Nationally and internationally nurses are being recognized for their contributions. The IOM study in 2010 called for removing barriers to scope of practice and increased level of education for nurses [44]. More recently the World Health Organization (WHO) published “Global Strategic Directions for Nursing and Midwifery 2021-2025.” This document presents evidence-based practices that can contribute to achieving to universal health coverage and other population health goals [70]. The transformation of nurses as an international force enabling cost-effective accessible care is well underway.

Reaching Consensus in the United States

The paradigm of traditional healthcare is shifting, and boundaries are becoming fluid. Regulation on a state-by-state basis is no longer a viable option with the advent of telemedicine and virtual visits. The “consensus model,” endorsed by 44 national organizations, provides a blueprint for the future [71]. The purpose is to standardize regulation related to advanced practice nurses and provide for mobility from one state to another.

The components of the model are licensure, accreditation, certification, and education (LACE). The first assertion is that all educational programs must be accredited by a national accreditation body and new programs must receive preapproval to ensure program standards are met.

Education will be at the graduate level with core courses of pathophysiology, physical assessment, and pharmacology taken together as a group. The specialty courses will follow with a population focus: family/individual across the lifespan, adult gerontology, neonatal, pediatrics, women’s health, and psychiatric mental health. The program must include the prescribed clinical hours of direct patient contact.

Graduates must sit for a national certification examination that is psychometrically sound and legally defensible. Licensure will be in one of the four advanced practice roles: nurse practitioner, clinical nurse specialist, nurse midwife, and nurse anesthetist. The title designation for all four roles will be APRN.

Adoption of the APRN regulatory model by individual states will eliminate the inconsistency in practice. Advanced practice nurses will be able to move from state to state and will no longer need multiple licenses to practice. Standardization will assure the public that all advanced practice nurses will have the same competencies. The movement to the doctoral level of education will solidify consistency. This progress has been slow occurring over 50 years. It has been a journey with highs and lows but is only the beginning.

The Journey

This chapter has chronicled the journey of nurse practitioners from the few determined individuals in the first class at the University of Colorado who were educated to provide care for underserved children to the thousands of nurse practitioners who now provide care in diverse settings throughout the world.

On the journey, nurse practitioners traveled through the maze of legislation, registration, reimbursement, and scope of practice. They have had supporters and detractors. The secret was to gather the supporters and others on the journey to travel together. Networking was and is key: the journey is more enjoyable and much easier to accomplish with colleagues. Networking began as telephone trees and has moved to social media in the past 50 years.

Each victory provided a steppingstone for another victory. Each study provided additional information. The quality of care provided by nurse practitioners is no longer questioned. The effect of full scope of practice has been realized in many cases and is an asset. Dr. Loretta Ford, in her presentation at the first international conference, stated, “the role and idea was described, discussed, debated, dissected, and defended, as well as deplored, denounced, depreciated and damned.” In the 1990s there were over 1000 studies of nurse practitioners making it the most studied profession. Nurse practitioners have moved beyond the need to prove they deliver cost-effective competent care and have developed innovative models to deliver care to all populations throughout the world [72].

The first AANP State Award for Excellence was announced in 1991 at a conference in Washington DC. As each recipient took the stage, they related their story and why they were selected. Each story was more compelling than the next. The range of innovative models for the distribution of care was extensive. The stories ranged from providing primary healthcare to indigenous populations at the water-hole to providing coffee, sandwiches, and healthcare care to the homeless population living under the bridge. There were also stories of setting up inner-city clinics for HIV/AIDS patients and maternity services for uninsured women. This was a time of healthcare reform, and these stories represented a new paradigm for the distribution of healthcare. A corporate sponsor who was in attendance thought the ceremony should have been taped and sent to all the legislators. This was the realization of healthcare reform [personal experience, Washington DC 1991].

Responding to social change over the years, full scope of practice has been realized in 26 states, the District of Columbia, and 2 US territories. In response to the Covid-19 epidemic, additional states have granted temporary full scope of practice to nurse practitioners. Five states requiring physician collaboration suspended the restriction. Again, in times of crises, nurse practitioners can practice autonomously.

Currently there are more than 355,000 nurse practitioners licensed in the United States. In an AANP survey, over 81% of Medicare and 78.7% of Medicaid patients were seen by nurse practitioners [73]. Many of the nurse practitioners practice in underserved areas and specific populations within urban areas. This has been an ongoing journey, but the journey was never the goal.

The real story is the impact the nurse practitioner journey has had on the patients. The small group of early nurse practitioners expanded over the years and on their

journey and took care of the indigenous people at the waterhole, the initial HIV/AIDS patients that were ostracized, and those in housing projects with no access to care. The history demonstrates the transformation of healthcare in response to social changes in society and advancements in technology. The focus was on holistic care to the patient whether in the ICU or the villages. Each person had a voice and nurse practitioners listened. The goal has always been about equitable distribution of cost-effective, accessible quality care.

In 60 interviews from 2000 to present of the Fellows of the American Association of Nurses Practitioners, a common theme voiced was that despite the challenges the nurse practitioner role is the best profession, and even with the benefit of hindsight, they would not have changed their career path. Through our history we can appreciate the path to success. The history demonstrates persistence, networking, and the acknowledgment that each small step is significant over time.

Celebrating our past, Dr. Loretta Ford donated a portion of her historical documents to the Bates Center for the Study of the History of Nursing at the University of Pennsylvania. Members of the AANP History Committee and her family celebrated this milestone in preserving nurse practitioner history. Dr. Ford and the nurse practitioners that followed demonstrate how a small, dedicated group can alter history.



Dr. Barbara Sheer chair of the AANP History Committee and Dr. Loretta Ford with her family reviewing the “Ford Collection” at the Bates Center

Nurse practitioners and advanced practice nurses are a global force and are making great strides toward the ultimate goal of “health for all.” Victor Hugo once said, “There is one thing stronger than all the armies in the world and that is an idea whose time has come.” The idea that a small group can make a difference in a global community is an idea whose time has come.

This chapter is dedicated to all the nurse practitioners throughout the world who believed they could make a difference in establishing “health for all.”

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The Global Emergence of the Nurse Practitioner Role

Madrean Schober

Introduction

As countries assess the efficacy of their healthcare services and strive to provide universal healthcare (UHC) to diverse populations, there is a need to identify solutions that enhance access to care and close existing gaps in provision of healthcare services. As a foundation for UHC, the World Health Organization (WHO) recommends reorienting healthcare systems toward primary healthcare (PHC). In addition, WHO emphasizes the central role of nurses in achieving UHC and the WHO Sustainable Development Goals (SDGs) by recommending that healthcare systems maximize the contributions of the nursing workforce in order to achieve UHC [2, 3]. The concept of advanced practice nursing and the advanced practice nurse (APN) is one option that is consistent with this perspective and is evolving globally. The nurse practitioner (NP) is one of the common APN roles that are emerging worldwide. Nurse practitioner initiatives have appeared in disparate regions internationally for over five decades.

This chapter provides the International Council of Nurses' (ICN) definition for an NP and identifies factors contributing to this global trend. The sensitive nature of country context is revealed along with how the local or national interpretation of who this nurse is determines what services this healthcare professional provides. Country and regional exemplars are described to underscore the variations in the promotion and development of nurse practitioners but are not intended to be an exhaustive list of nations implementing NP roles and advanced levels of nursing practice. Additional chapters in this book provide in-depth country and regional narratives of NP development and implementation.

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The International Council of Nurses' Nurse Practitioner Definition

The International Council of Nurses provides the following NP definition in the ICN Guidelines on Advanced Practice Nursing 2020 [1]:

A Nurse Practitioner is an Advanced Practice Nurse who integrates clinical skills associated with nursing and medicine in order to assess, diagnose and manage patients in primary healthcare (PHC) settings and acute care populations as well as ongoing care for populations with chronic illness. (p. 6)

The ICN Guidelines on Advanced Practice Nursing 2020 goes on to describe a scope of practice for the NP [1]:

The focus of NP practice is expert direct clinical care, managing healthcare needs of populations, individuals and families, in PHC or acute care settings with additional expertise in health promotion and disease prevention. As a licensed and credentialed clinician, the NP practices with a broader level of autonomy beyond that of a generalist nurse, [using] advanced in-depth critical decision-making and works in collaboration with other healthcare professionals. NP practice may include but is not limited to the direct referral of patients to other services and professionals. NP practice includes integration of education, research and leadership in conjunction with the emphasis on direct advanced clinical care. (p. 19)

The scope of practice for the NP differs from that of the generalist professional nurse in the level of accountability and responsibility required to practice. Establishment of a scope of practice is a way to inform the public, administrators, and other healthcare professionals about the services the NP can provide.

Factors Influencing Consideration of the Nurse Practitioner Concept

The NP concept often develops out of identified healthcare needs along with motivation by individual, practicing nurses who envision that healthcare services provided by NPs can enhance care to diverse populations. In addition, development of the NP concept forms part of the global reconceptualization of the current and future healthcare workforce as being at the forefront of meeting Sustainable Development Goals (SDGs) as defined by the United Nations (UN) and developed by the World Health Organization (WHO) [2]. In acknowledging that nurses and midwives are central to primary healthcare (PHC), WHO also acknowledges that achieving health for all will require investments in education and job creation for nurses who play a critical role in health promotion, disease prevention, and delivering PHC and community care. There is increasing acknowledgment that all nurses and those in advanced clinical roles such as NPs should be educated, recognized, and authorized to practice to their full potential [3–6]. Identifying NPs as a potential for

strengthening the healthcare workforce places these healthcare professionals at the forefront in the global plan to significantly diminish the complex factors that adversely affect health and access to healthcare.

This section identifies international incentives and motivators that contribute to the consideration and promotion of APN initiatives, including the NP role and level of practice. The potential for considering the concept of advanced practice nursing is shaped by the country or regional context [1]. Four main themes are identified as providing momentum for launching a new initiative or continuing to sustain a system that is already in place [7–9]:

- Public demand for improved access to healthcare services and delivery
- An identified healthcare need for provision of healthcare services
- An answer to skill mix and healthcare workforce planning
- A desire for the advancement of nursing roles to enhance professional development

Additional factors that influence these four main themes and warrant discussion when developing a plan or framework for APN that includes NP development [1, 7–9]:

- Strong education programs for the generalist nurse that provide a robust foundation for advanced clinical education specific to the NP role
- Flexible and realistic education alternatives that not only educate the competent NP, but offer options when a country is in a transitional process to establish an NP presence
- Clinical career pathways for advanced clinical practice
- Effective mentorship and nursing leadership to support and promote the NP concept
- Links to governmental and nongovernmental agencies aligned with international expertise to establish a professional standard, credentialing process, and regulations

No single starting point is viewed as pivotal when launching a successful and sustainable NP initiative. In addition, global development in some countries follows parallel paths for other APN roles such as the CNS (clinical nurse specialist) or NA (nurse anesthetist). The sensitive nature of country or local context warrants advanced assessment of the specific setting(s) in which the NP will practice [1, 10]. Motivation and specific drivers alone do not fully describe the complexities involved when proceeding to integrate the NP concept into healthcare systems. However, identifying a driver or drivers provides a stronger foundation for launching and sustaining a successful NP initiative. Country and regional exemplars of NP initiatives are provided later in this chapter. These exemplars demonstrate factors that influenced the beginning development and promotion of an NP presence in select nations.

Approaching Global Nurse Practitioner Development

An NP scope of practice is built on the scope of practice defined for a generalist professional nurse and expands beyond that scope in terms of function, expertise, and accountability based on advanced education [1]. To be effective, NP practice must be anchored within the national and local healthcare system(s) and tailored to meet the needs of the population. This means that globally, NP practice, while sharing many similarities, also looks different in different parts of the world. Therefore, a range of approaches rather than a single prescriptive solution for defining an NP initiative ideally offers flexibility and a grounded process for development.

Discussions seek to define the NP focus on changes in boundaries of nursing practice. A country's stakeholders and decision-makers will likely see this as a paradigm shift from a more traditional view of nursing practice and collaborative practice with other healthcare professions [11].

NP practice often exists in settings where the NP provides primary healthcare services; thus prescriptive authority and the ability to make an initial and/or differential diagnosis as part of therapeutic management are seen as prerequisite for the NP to practice to the full potential of the role. Recognition of these elements of the role enables the NP to function at a level appropriate to their scope of practice under the professional standard and regulations of the country where they work. Even though these features are seen as central to NP practice, conversation related to nurse prescribing and diagnostic decision-making often stimulates lively debate when promoting new NP initiatives [10, 11]. It is the view of this author that NP prescriptive authority and use of a common diagnostic language are ways to attain consistency of care in provision of healthcare services as the world strives for universal healthcare.

Country Exemplars

The changes supportive of NP development and implementation take place over years, at times following decades of discussion and decision-making under diverse and complex circumstances. In this section, country exemplars have been selected to present illustrations of initial development as the NP concept emerged in a nation or region and to further highlight initiatives experiencing sustained success. The exemplars are not meant to be an exhaustive list of all countries with an NP presence, but to demonstrate similarities and yet diversity with which countries seek to integrate a new nursing role into their healthcare systems. Emphasis is on portraying country profiles that developed and integrated the NP concept tailored to country needs, healthcare context, and resource capabilities. In addition, country exemplars were chosen that clearly relate to the NP presence in primary care and PHC in communities and where the role is consistent with the ICN definition for the NP.

The global emergence of NPs is often attributed to the origins of the NP role in the USA in 1965 [12]. Where there is evidence of this association, country profiles include mention of adaptation of the USA NP model or collaboration with USA

mentors. The country illustrations demonstrate the somewhat simultaneous NP development that emerged in diverse regions globally from the 1960s over time. International surveys conducted from 2001 to 2014 found that anywhere from 25 to 60 countries were in various stages of exploring or implementing NP/APN roles [11]. Based on membership in the ICN NP/APN Network, over 100 nations indicate a level of interest in advanced nursing practice, although this does not necessarily mean an active presence of APNs or NPs (www.icnnpapnetwork.wildapricot.org).

The author is aware of international collaboration between multiple countries other than the USA. As successful NP initiatives became more visible, representatives or delegates from countries with a thriving and effective NP presence are able to offer guidance to newly emerging projects and proposals worldwide. This inter-country collaboration speaks to the continued and heightened interest along with success of NPs globally.

Australia

The Australian health system is jointly coordinated by all levels of Australian government—federal, state, territory, and local. The aim is to provide health and well-being for all Australians through evidence-based policy, well-targeted programs, and best practice regulation. Medicare and the public hospital system provide free or low-cost access for all Australians to most of these health services. Private health insurance provides a choice outside of the public system. For private healthcare both in and out of hospital, the consumer contributes to the cost of their healthcare (www.health.gov.au/about-us/the-australian-health-system).

The prediction of a shortfall in medical graduates choosing primary care as their preferred option contributed to the consideration of APNs as one of the strategies in Australia to cope with this deficit. In October 1990 the first NP committee convened in New South Wales (NSW). This led to the formation of a steering group and the beginning of the NP movement at the NSW Nurses' Association Annual Conference [13, 14]. In January 1994, NP pilot projects were established to evaluate NP models in rural and remote areas, midwifery, well women's screening, emergency services, urban homeless men services, and general medical practice. The outcome of the evaluation found that NPs were effective in their roles and provided quality healthcare services [14–16]. The authorization process was formalized in 1999 paving the way for the first NP endorsement in 2000.

The Australian College of Nurse Practitioners (ACNP) is the national representative body for NPs and APNs in Australia (www.acnp.org.au). ACNP is active in advancing nursing practice and improving access to healthcare and defines NPs in Australia as registered nurses with the experience and expertise to diagnose and treat people of all ages with a variety of acute or chronic health conditions. Based on master's degree education, NPs practice autonomously and collaboratively with other healthcare professionals in a variety of locations [17]. The only regulated advanced practice role in Australia is the role of an NP. Registration for NPs is endorsed by the Nursing and Midwifery Board of Australia (NMBA) to enable the

NP to practice within their scope using the NP title, which is protected by law (www.health.act.gov.au).

As the NP initiative emerged in Australia, nursing leaders and regulators promoted a careful and strategic approach to development and implementation of NPs. As a result, the NP role and title are protected by legislation. Registration with the Nursing and Midwifery Board of Australia as an endorsed NP is a requirement to practice in this role. The first legally authorized NPs in Australia were recognized in 2000 and 2001. Within 9 years, following initial development in NSW, all Australian states and territories had achieved official recognition and a legislative framework for NP practice. The driver for this dramatic change in Australian healthcare, as envisioned by pioneer nursing leaders, was a commitment to patient-centered care and a patient-centered health service [13].

NPs in Australia are present in a variety of settings that include primary care, acute care, specialty medical services, and community care [14] with numbers increasing in response to identified gaps in service delivery. Even though there is evidence that NPs enhance quality of care and improve access to healthcare services, there continues to be a need for robust political support for NPs to practice to their full potential.

Refer to Chap. 23: The NP Role and Practice in Australia for an in-depth description of role development and implementation.

Botswana

Universal healthcare is offered to all citizens in Botswana through a public healthcare system, but privately run healthcare is also available. The government operates 98% of all medical facilities (www.moh.gov.bw). A nominal fee may be charged for some healthcare services in the public sector, but sexual reproductive health services and antiretroviral therapy services are free. The decentralized healthcare system in Botswana is comprised of 27 health districts, including mobile locations, clinics, and hospitals (www.borgenproject.org/healthcare-in-botswana).

Developments in provision of healthcare services were a result of societal needs and demand; in particular a shift of emphasis from hospital-based care to PHC in the late 1970s led to the establishment of the family nurse practitioner (FNP) program in Botswana [18]. Country independence from the UK in 1966, a need for healthcare reform, and a shortage of physicians triggered the need for nurses to accept increased responsibilities for PHC services. The nurses accepted these increased responsibilities but demanded further education to meet the healthcare needs of the country [19].

The Ministry of Health, through the then National Health Institute, responded by establishing the first family nurse practitioner (FNP) advanced diploma program in 1981. The 1-year post-basic program was established to educate nurses in advanced skills to provide comprehensive PHC services for common problems of the population in Botswana. In 1989 there were estimated to be 80 graduates identified as FNPs who were willing to work in the remotest communities [20]. In response to

the country's healthcare needs and consumers' demands, the length of the education program was extended to 18 months, and revisions to the curriculum for the diploma program took place in 1991 and 2001, and in 2007 a four-semester format was introduced. However, the program did not achieve identification resulting in a master's degree even though the education is comparable.

As of May 2020, the diploma program was at an advanced stage of revision at the Institute of Health Sciences (IHS) [formerly called the National Health Institute]. In addition, the University of Botswana offers a master's degree program for the FNP with discussions underway to determine possible options to matriculate the two FNP options so that the University of Botswana could recognize prior learning at the IHS diploma program [21].

Refer to Chap. 19: The NP Role and Practice in Botswana for an in-depth description of role development and implementation.

Canada

Canada has a universal healthcare system funded through taxes for medically necessary healthcare services provided on the basis of need, rather than the ability to pay. This means that any Canadian citizen or permanent resident can apply for public health insurance. Each province and territory has a different health plan that covers different services and products (www.canada.ca/en/services/health.html). The organization of Canada's healthcare system is largely determined by the Canadian constitution, in which roles and responsibilities are divided between the federal, provincial, and territorial governments.

The origins of advanced practice nursing in Canada can be traced to the efforts of outpost nurses who worked in isolated areas in the early 1890s but were largely unrecognized within the Canadian healthcare system. Since the 1960s, APN roles became more formalized [22]. To overcome a physician shortage in rural and remote areas, the primary healthcare NP (PHCNP) was introduced in the early 1970s, but by the 1990s the APN movement (NP and CNS) came to a standstill. The factors contributing to this included a greater availability of physicians, lack of a legislative framework or recognition in the nursing career structure, and poor public awareness of the APN concept.

As a result, NP educational programs were discontinued until the 1990s. The interest in NPs as cost-effective healthcare professionals in PHC was renewed in the 1990s by healthcare reform, an increased demand for access to PHC, and the need for integrated healthcare services. Formal legislation and regulation for NPs started in 1998 and all the provinces and territories now have it. NPs work across many settings and are well positioned to meet the ever-growing complexity and needs in Canada's healthcare system [23].

At the request of regulatory bodies in Canada, the core competencies for NPs were updated, resulting in the *Canadian Nurse Practitioner Core Competency Framework*. In 2016, the Canadian Council of Registered Nurse Regulators produced new *Entry-Level Competencies for NPs in Canada* as a result of the *Practice*

Analysis Study of Nurse Practitioners [23]. The study showed that NP practice is consistent across Canada, with NPs using the same competencies in all Canadian jurisdictions and across three streams of practice (family/all ages, adult, and pediatrics) included in the analysis. The Practice Analysis also indicated that the difference in NP practice in Canada lies in client population needs and context of practice, including age, developmental stage, health condition, and complexity of clients.

Refer to Chap. 11: The NP Role and Practice in Canada for an in-depth description of role development and implementation.

Republic of Ireland

The Republic of Ireland has a dual healthcare system, consisting of both private and public healthcare options. The public healthcare system is regulated by one government department, the Health Service Executive (HSE) (www.gov.ie/en/ & www.hse.ie/eng/). The mission of the Department of Health, which is made up of 12 divisions, is to improve health and well-being of people in Ireland by delivering high-quality health services and getting the best value from health system resources.

In 1996, the concept of an emergency NP was proposed in the James's Hospital Dublin. This initiative was intended to address a specific service need identified for patients with nonurgent clinical presentations to the emergency department. It was the first role of its kind in the Republic of Ireland and subsequently developed across a broad range of 30 nursing specialist areas [11].

A fundamental change experienced by the Irish nurses occurred with the publication of the Commission on Nursing, a blueprint for the future [24], and the subsequent development of the National Council for the Development of Nursing and Midwifery. The Commission on Nursing provided an opportunity for all Irish nurses to shape the future of clinical practice by outlining strategies to advance the nursing profession.

In 1998, the establishment of a clinical career pathway leading from initial nursing registration to advanced practice was recommended by the Commission on Nursing. This career ladder was created to retain expert nurses in direct patient care and served to develop clinical nursing and midwifery expertise. The development of advanced nurse practitioner/advanced nurse midwife roles and services was part of the strategic development of the overall health service reform in the country [25].

The Republic of Ireland has established frameworks and standards for the expansion of nursing and midwifery roles including practice standards as established by the Nurse Midwifery Board of Ireland that have been essential to role development. It is envisioned that nurses, such as NPs, will acquire the knowledge and skills to provide better patient care along with the efficient use of resources. In addition, there is an expectation that positive clinical outcomes are demonstrated [11].

The Irish Association of Advanced Nurse/Midwife Practitioners (IAANMP) was established in 2004 to provide support to nurses and midwives practicing at an advanced level in the Republic of Ireland [26]. In addition to peer support for its members, the Association has been instrumental in ensuring progression of a vision

of advanced practice nursing at a national and international level by noting that APNs, such as NPs, are integral to healthcare solutions by providing safe and effective healthcare.

Refer to Chap. 16: The NP Role in Ireland for an in-depth description of role development and implementation.

Jamaica

Healthcare in Jamaica is free to all citizens and legal residents at government hospitals and clinics (www.jamaicans.com/health-care-in-jamaica/). This includes prescription drugs. Private physicians and clinics are widely available if the consumer has the funds or insurance to cover the cost. The introduction of free public health services to its citizens in 2008 to make healthcare accessible to all Jamaicans facilitated a dramatic increase in patients and resulted in an overload on the healthcare professionals. This situation along with scarcity of resources continues to challenge the Jamaican effort to provide UHC to its citizens (www.borgenproject.org/healthcare-in-jamaica/). Jamaica's medical infrastructures often do not match the demand of its patients. In 2019 the Minister of Health and Wellness announced an upgrade in public health facilities, in addition to developing more sophisticated healthcare technology.

In July 2017, the island of Jamaica celebrated 40 years of NPs providing healthcare services. Discussions on the expanded role of the nurse in Jamaica began in 1972. Twenty-five experienced nurses entered the first NP program in 1977. The NP program was established as a cooperative effort by personnel from the Ministry of Health (MOH), University of the West Indies (UWI), Pan American Health Organization (PAHO), and PROJECT Hope [7]. Throughout the early years Project Hope (USA) provided staff, equipment, and faculty in addition to textbooks, journals, and audiovisual equipment. The first group of NPs began practice in 1978. The MOH was the employer of the NPs with the nurses assigned mainly to provision of PHC services (personal communication H. McGrath 6/6/22).

Education of nurses as NPs was a response by the MOH to provide staff for the public health sector as the country was experiencing an acute shortage of physicians, especially in the rural areas. NP education began as an Advanced Nursing Education Unit based on the US NP concept. The first cohort consisted of 18 FNPs and 7 pediatric NPs with the course of study offered as a 1-year certificate. The pediatric specialty was discontinued in 1979, and mental health was introduced in 1997 (personal communication H. McGrath 6/6/22). In 2002, the NP program became fully university based at UWI and was upgraded to the master's level [7].

Desiring improved NP representation, especially for legislative issues, the Jamaica Association of Nurse Practitioners (JANP) was founded in 2009 to promote advanced nursing practice, advocate for access of affordable quality care for the population, as well as give NPs a voice internationally (<https://www.facebook.com/JamaicaAssociationOfNursePractitioners>). Even though Jamaica has been the

leader of NP education and practice in the Caribbean Region, the island nation continues to face challenges in gaining explicit legislation supportive of NP practice.

Refer to Chap. 12: The NP Role and Practice in Jamaica for an in-depth description of role development and implementation.

New Zealand

New Zealand's healthcare system is a universal public system. With the 1938 Social Security Act, New Zealand brought into law universal and free healthcare. The Act requires that all New Zealand citizens have equal access to the same standard of treatment in an integrated, preventative healthcare system. The government pays for the majority of healthcare costs using public tax money meaning that healthcare for citizens and permanent residents is either free or low-cost (www.internationalinsurance.com). There is also an option to choose medical insurance for private healthcare.

In New Zealand the shift to population-based and PHC services combined with a realization by the government that nurses do have untapped potential to provide a greater range of services ignited interest in introducing NPs into the healthcare workforce [27]. The APN concept was initially recognized in New Zealand in 1988 at two levels. The New Zealand Nurses' Organization's (NZNO) credentialing process certified nurses as nurse clinicians or nurse consultants (clinical) in an attempt to promote the concept of advanced practice in nursing; however, it was difficult to differentiate the difference between these two roles. The NP concept was then introduced in 2000 and the NZNO phased out its earlier certification process in 2006.

The government of New Zealand, while recognizing nurses were already providing some services at an advanced level, established a task force in 1998 to identify barriers to provision of optimal healthcare services by nurses. The Ministerial Taskforce on Nursing identified barriers to nursing practice and examined strategies to remove barriers and release the unused nursing potential. The task force recommended development of an APN model, and it was agreed that this role should be the NP. In addition, nursing leaders determined the title *nurse practitioner* should have a separate scope of practice that is regulated and the title should be endorsed by the national regulator, the Nursing Council of New Zealand. The New Zealand Gazette (the government's journal of constitutional record) published the first NP scope of practice in 2004 [28]. The presence of a supportive Chief Nursing Officer at the Ministry of Health was critical to the success achieved in obtaining government acknowledgment that regulation, formal recognition, and employment of NPs would improve health outcomes of the population [27, 28]. The first NP was endorsed in New Zealand in 2001 [21, 28]. In 2015, the Nursing Council of New Zealand (NCNZ) no longer restricted NPs to a specific area of practice and introduced a new more general scope of practice [28].

Refer to Chap. 22: The NP Role and Practice in New Zealand for an in-depth description of role development and implementation.

UK (England, Northern Ireland, Scotland, Wales)

The National Health Service (NHS) provides residents of the UK healthcare services based on clinical need, not ability to pay. There are different eligibility criteria across the nations of the UK. Since devolution in the late 1990s, the respective governments in England, Scotland, Wales, and Northern Ireland have been responsible for organizing and delivering healthcare services (www.euro-healthobservatory.who.int). The NHS budget is funded primarily through general taxation.

Dr. Barbara Stilwell is considered to be one of the first NPs in the UK as well as a trailblazer and influencer driving the UK NP initiative. Upon receiving an honorary doctorate at London South Bank University in 2016, Barbara Stilwell commented on her contribution to inspiring the UK NP movement:

The idea of nurse practitioners was inspired by my experiences as an inner-city health visitor... working in Birmingham, dealing with a lot of families from the Indian sub-continent. Women would come to the clinic wanting to talk about sensitive things like family planning, screening or childbirth and there were no female doctors to help them. It was also very clear to me that nurses' skills and knowledge were being under-used. I happened to read something about nurse practitioners in the US and thought, why don't we have something like that here? We set up a trial clinic and I wrote an article for the Journal of Advanced Nursing. Peggy Nuttall, one of the grandes dames of nursing, read it and offered me a scholarship to go and study in the nurse practitioner programme in North Carolina [USA]. It all started from there. [29]

Dr. Stilwell practiced alongside physicians in an inner-city setting from 1982 to 1985 adapting the US model of examination, diagnosis, and treatment that included a focus on long-term health goals [30–34]. Her experiences and research informed the curriculum for the Royal College of Nursing (RCN) NP diploma course. Dr. Stilwell's conclusion was that a NP is defined not merely by transference of tasks from other healthcare professionals, but by autonomy of practice involving case management.

The first education collaborations in the UK arose in the 1990s as a result of the implementation and franchise of the RCN "Nurse Practitioner" Diploma. The first cohort of NPs was educated in the UK in 1990–1992 (personal communication K Maclaine, 05/2022). This cohort subsequently traveled to NP conferences in the USA. Some remained in the USA to be mentored by US NPs. In 2000 the first NP course transferred from RCN to London South Bank University.

In addition to RCN formulating initial NP education, the RCN Advanced Nurse Practitioner Forum began to hold annual NP conferences in the 1990s. These were primarily focused on the UK market with international representatives participating on an individual basis. The conferences rotated around the UK and facilitated discussions related to the global emergence of the NP concept that preceded and led to the launching of the ICN NP/APN Network.

The RCN franchise also brought together a small group of UK university representatives that began to meet on a regular basis to share their educational

experiences and expertise. A key part of the stimulus for NPs in the UK included setting up the UK NONPF (National Organization for NP Faculty) in 2001, based on the US NONPF. This helped support NP education which was a key grassroots driver for NPs in the UK in getting it off the ground and collectively lobbying for standards and high-level recognition. UK NONPF has evolved to become the Association of Advanced Practice Educators (AAPE UK) that represents a collaborative network of higher education institutions (HEI's) across the UK who are providers of advanced clinical practice programs of education for interprofessional/multiprofessional groups. AAPE UK includes representation of advanced nurse practitioners along with other advanced healthcare professionals (www.hallamedical.com/partners/appe/).

Development of the advanced nurse practitioner (ANP) in the UK is often described as a single approach in development; however, the ANP has emerged differently in the four nations of the UK (England, Northern Ireland, Scotland, Wales). Following devolution of the UK around 2005/2006, each country now has a separate government with the individual countries determining their own health policy and approaches. These differences are reflected in how ANP has progressed in each nation [11, 35].

Issues including inconsistent health policy, education, regulation, and lack of title protection have plagued the UK since the inception of the NP concept. Lack of regulation led to a decision by the RCN in 2012 to change the title to *advanced nurse practitioner* in order to bring clarity to the role. Unique to the UK, advanced practice as a whole has now moved, or is moving, toward a multiprofessional approach recognizing advanced practice as a level of practice rather than a specific role [35]. This multiprofessional approach indicates that educational programs for allied health professionals are considered to be multiprofessional with study programs leading to the title *advanced clinical practitioner*. However, many nurses who undertake these programs of study still use the title *advanced nurse practitioner* as advocated by RCN [25]. Ongoing challenges and the complexity of the context in the UK continue to impact NP development.

Refer to Chap. 14: The NP and Practice in the United Kingdom for an in-depth description of development.

International Influence

Visible support for the NP concept by international organizations can provide the authority and advocacy that an initiative may need to convince key stakeholders and healthcare decision-makers of the benefits of NPs. When a scheme is viewed as part of global advancement for universal healthcare services versus only a local or national directive, this backing offers an increased level of credibility for consideration of an NP proposal. Sections 2.5.1 and 2.5.2 provide examples of how international entities promote the advancement of nursing practice that includes NPs.

International Council of Nurses (ICN)

The launching of the ICN Nurse Practitioner/Advanced Practice Nursing (NP/APN) Network in 2000 signaled the advent of a new era in the recognition of the progression of the NP concept and advanced practice nursing worldwide. Representatives from 25 countries, displaying their national flags, gathered for this momentous event in San Diego, California, USA, to provide encouragement, inspiration, and energy for what was recognized as a global trend [11]. ICN sought organizational support to follow trends and new developments in this new field of nursing. Since that time, enthusiasm continues to grow, and interest in advanced practice nursing, including the NP concept, has progressed. This progression has been positively influenced by international organizations such as ICN and WHO (World Health Organization) [1, 2].

In 2000, although there was increased attention for advanced practice nursing, there was also uncertainty as to the intent and function of this classification of nurses. ICN had been observing the global growth of APNs since 1994 [7]. Subsequent to the launching of the NP/APN Network, along with recognition of this ambiguity, ICN took the first step in 2002 to recommend a definition, scope of practice, and characteristics for a nurse practicing in an advanced capacity and role [36]. At the time, the intent was to provide a benchmark to refer to and offer points for countries to discuss as they developed the APN concept sensitive to country context. Over time discussions have matured and research on the subject of advanced practice nursing has increased. It is worth noting that the recognition of this trend by ICN and the ICN NP/APN Network has had a lot to do with lending credibility and encouragement in support of the global emergence of NPs. Through the expertise of its NP/APN Network members, ICN continues to review the relevance of its official position on APN roles, including NPs, as well as to follow this global trend.

World Health Organization (WHO)

As an agency of the United Nations, WHO emphasizes international cooperation aimed at improving and providing universal healthcare worldwide. Although its emphasis is not specific to nursing, WHO can influence the extent of attention given to the advancement of nursing/midwifery and the contributions nursing professionals can make in achieving SDGs [2]. Working in collaboration with ICN, in addition to an array of other partners, WHO efforts have the potential to strengthen support for nursing/midwifery and further ensure that NPs are visible in discussions of effective and quality healthcare.

The WHO Global Strategic Directions for Nursing and Midwifery 2021–2025 presents evidence-based practices and an interrelated set of policy priorities that can help countries ensure that midwives and nurses optimally contribute to achieving universal health coverage and other population health goals [2]. This document

includes a strategic direction to establish and strengthen nursing leadership and service delivery that acknowledges the influence and effectiveness of advanced practice nurses. The policy priority emphasizes adaptation of workplaces to enable midwives and nurses to maximally contribute to service delivery in multidisciplinary teams. In addition, it is noted that laws and regulations can intentionally restrict midwives and nurses from practicing to the full potential of their education, sometimes due to “turf” issues with other groups of healthcare professionals. Recognition of this issue includes a call to action to update legislation and regulations in order to optimize these roles in practice settings.

In addition, WHO regional offices have provided support to strengthen acceptance of advancing expanded roles for nurses. The WHO Eastern Mediterranean Regional Office (WHO-EMRO), aware that advanced nursing practice and nurse prescribing was a growing trend, held a meeting of country representatives in Pakistan in 2001 to discuss these topics and identified strategies for progress in the region [27].

The World Health Organization-South East Asia Region (WHO-SEAR) [27] in making the case for a more flexible global nursing and midwifery workforce provided a conceptual framework in 2003 to assist countries to develop strategies to strengthen coordination between education and practice with service needs. The emphasis was on developing skills and competencies for nurses that correspond with service requirements and health priorities for the region.

In 2013, members of the Pan American Health Organization (PAHO), the Americas’ regional office of WHO, passed a resolution to increase access to qualified healthcare workers in PHC-based health systems, urging education and implementation of APNs. In 2014 the WHO-PAHO regional leaders established a working plan to support the expansion and professionalization of advanced practice nursing. The plan included goals for education, regulation, and scope of practice of the APN role. Through prioritizing the preparation and professionalization of APNs in Latin America, there is an expectation that the presence of APNs will enhance the quality of PHC and offer a solution to disparities in universal healthcare in the region. In order to move this agenda forward, the Universal Access to Health and Universal Health Coverage: Advanced Practice Nursing Summit in 2015 hosted by PAHO/WHO fostered collaboration between nursing leaders and institutions in North America with those in Latin America and the Caribbean in order to outline priorities for APN implementation [11, 37].

When effective, influence by international organizations provides the capacity to strengthen support for a heightened NP presence by facilitating discussion forums, providing workshops or webinars and conferences, as well as offering consultancy expertise. In addition, publications and resources arising from the international community can incentivize healthcare planners and key decision-makers to consider integration of NPs in enhancing PHC and universal healthcare services.

Conclusion

The NP concept emerged in the USA in 1965 with the collaboration of a nurse and a physician (Dr. Loretta Ford and Dr. Henry Silver) responding to an identified need to improve healthcare services for underserved children. Country profiles in this chapter demonstrate global emergence of the NP role in disparate regions of the world. Motivation for new initiatives was driven at times by individual nurses who identified a healthcare need and saw the potential for nurses to enhance healthcare services. In addition, nongovernmental and governmental agencies pursued innovative solutions to pressing healthcare needs as their countries sought to provide PHC in community settings. Nurses with advanced education and skills have been repeatedly identified as an effective option. This trend and the growth of the NP phenomenon continue to increase worldwide undoubtedly based on a foundation of the international successes of early NP initiatives. In addition, increased global visibility of a growing NP presence has added to the discussion that these nurses are a valuable option for provision of diverse healthcare services and universal healthcare.

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Differentiation of International Advanced Practice Nursing Roles: NP and CNS

Madrean Schober

Introduction

The global emergence of advanced practice nursing and the establishment of the concepts of the nurse practitioner (NP) and the clinical nurse specialist (CNS) have resulted in robust discussions when attempting to differentiate the distinctive features of these roles and levels of nursing practice. Internationally, with increased parallel development of both the NP and the CNS, their definitive characteristics have become blurred as key stakeholders attempt to identify these nurses and integrate them in a variety of healthcare systems. In spite of this, the two roles remain largely distinct, albeit with some overlap in actual practice and development.

This chapter provides historical backgrounds for both the NP and the CNS, noting differences in the stages of initial development. In addition, this chapter strives to differentiate and clarify traits that are viewed as characteristic of the NP and the CNS. The aim is to highlight key similarities and differentiate distinct differences, but it is not intended to be an exhaustive depiction of the NP and the CNS. For in-depth descriptions and more detailed discussion of the two roles and level of practice, the author recommends the reader review the ICN Guidelines on Advanced Practice Nursing 2020 [1] and additional APN, NP, and CNS publications [2–6].

Historical Background of the NP and CNS

This section sets the stage for an enhanced understanding of how the NP and the CNS evolved. These background narratives offer continuity and a basis for current thinking that in turn provides a foundation for understanding the two roles in order to facilitate effective support for practice and policy.

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Historical Background of the NP

The establishment of the first pediatric NP program at the University of Colorado in 1965 marked the inception of the NP role in the USA. Initiated as a demonstration project, the 4-month program was designed to prepare nurses to provide comprehensive well-child care and manage common health problems. As a result, the pediatric NP (PNP) role emerged [7]. While this was seen as a landmark occurrence, the PNP role is also viewed to be modeled informally on services provided by visiting nurses in disadvantaged communities as early as 1893. However, it was during the 1960s the NP was first described formally and implemented in outpatient pediatric clinics as part of a response to a shortage of primary care physicians.

The emergence of the NP was not without significant intraprofessional controversy. The initial education and preparation of the NP based on a nursing model began to shift to an overlap with the medical model, essentially stepping over the *invisible* medical boundary into the realm of curing [7, p. 17]. Despite this controversy, at the same time, healthcare consumers were demanding accessible, affordable, and responsive healthcare services [7]. At the grassroots level, there was an emerging and growing acceptance of the NP concept, and in the 1970s there was a heightened visibility of NPs in a variety of healthcare settings, especially in primary healthcare (PHC). Controversy and support characterized the growth of NP numbers in the USA as key stakeholders, healthcare planners, and other healthcare professionals met the challenges of developing and implementing the NP presence.

As the American NP gained prominence, the NP concept was also noted internationally as countries searched for answers to growing PHC needs. Many nations attribute the introduction of NPs in their healthcare systems to the observed success in the USA; however, to overcome a physician shortage in rural and remote areas, the NP also emerged in Canada based on the presence of outpost nurses providing PHC to underserved populations more than 100 years ago. The primary healthcare NP (PHCNP) was developed in answer to this need and subsequently appeared in the urban areas in the 1970s with a second-wave revival of the PHCNP concept in Canada in the 2000s [8]. Refer to Chap. 2 for global examples of NP initial development including the Canadian history and Chapter 11: The NP Role and Practice in Canada.

The NP concept often emerges as a response to identified healthcare needs, especially to underserved or disadvantaged populations. As numbers of NPs continue to increase and practice patterns diversify, comprehensive PHC remains a common focus of NP practice.

Historical Background of the CNS

The CNS evolved out of the increasing complexity of nursing care and increasing technological advances in provision of healthcare services, especially in hospital and institutional settings. The origin of the CNS emerged from an identified need for specialty practice in nursing [1, 7, 9]. Psychiatric CNSs as well as nurse anesthetists and nurse midwives led the way. In the USA the growth of hospitals in the 1940s as well as the development of medical specialties and related technologies further stimulated the evolution of the CNS [2, 7]. Postgraduate courses in specific

areas of nursing practice became available, usually at the master's degree level. These nurses were considered to practice at a higher degree of specialization than that already present in nursing and are viewed as the originators of the contemporary CNS role. CNS origins were seen to be positioned more comfortably within the traditionally understood domain of nursing practice and thus were able to progress essentially unopposed [2, 11].

In Canada, CNSs first emerged in the 1970s as the provision of healthcare services became more complex. The initial emphasis was to provide clinical consultation, guidance, and leadership to nursing staff managing complex and specialized healthcare in order to improve the quality of care and to promote evidence-informed practice. The CNSs focused on complex patient care and healthcare system issues. The CNS role has developed over time including a multifaceted profile that includes direct clinical care in a clinical specialty as well as indirect care through education, research, and support of other nurses and healthcare staff. CNS leadership contributes to specialty program development and facilitation of change and innovation in healthcare systems [12].

Although the CNS concept originally emerged in hospital and institutional settings [1, 9, 12], the role has evolved to provide specialized care for populations with complex and chronic conditions in outpatient, emergency department, home, community, and long-term care settings. Even though nurses who practice in various specialties may consider themselves to be specialized nurses, the designated CNS, educated at an advanced level, has a broader and extended range of accountability and responsibility for improvements in the healthcare delivery system in addition to direct clinical care.

Terminology

As the concepts of the NP and the CNS have evolved, it is worth noting that the use of the term *specialist* in nursing can be traced to a time when it was used to designate a nurse who had completed a course beyond that of a generalist nurse in a specialty area or who had extensive experience and expertise in a specific clinical practice area. Following the introduction of the NP concept, words such as expanded role and extended role were used implying a horizontal movement to encompass expertise from other healthcare disciplines. Development of the NP concept included extension of the nursing role that became more inclusive as nurses acquired additional advanced skills and knowledge. In addition, NPs were working at an advanced level of clinical practice with expanded and enhanced levels of autonomy, responsibilities, and accountability in the provision of healthcare services. Over time, since the 1980s, terminology and thinking that addresses *advanced practice* suggests a more vertical or hierarchical progress encompassing graduate education within nursing, rather than a simple expansion of expertise based on knowledge and skills used by other healthcare disciplines [7]. In order to facilitate a common understanding of the NP and CNS, this section provides definitions for the NP and CNS that are the official positions of the ICN [1].

Definition of Nurse Practitioner (NP)

An NP is an advanced practice nurse who integrates clinical skills associated with nursing and medicine in order to assess, diagnose, and manage patients in primary healthcare (PHC) settings and acute care populations as well as ongoing care for populations with chronic illness [1, p. 6]. NPs are generalist professional nurses, who after additional education (minimum master's degree for entry level) are autonomous clinicians educated to diagnose and treat conditions based on evidence-informed guidelines that include nursing principles that focus on treating the whole person rather than only the condition or the disease. The NP brings a comprehensive perspective to healthcare services by blending clinical expertise in diagnosing and treating health conditions, including prescribing medications, and an added emphasis on disease prevention and health management [1, p. 18].

Definition of Clinical Nurse Specialist (CNS)

A CNS is an advanced practice nurse who provides expert clinical advice and care based on established diagnoses in specialized clinical fields of practice along with a systems approach in practicing as a member of the healthcare team [1, p. 6]. A CNS is a nurse who has completed a graduate program (master's or doctoral degree) specific to CNS practice with an emphasis on providing advanced specialized expertise when caring for complex and vulnerable patients. The combination of advanced specialized nursing care and a systems approach of the CNS integrates direct and indirect clinical healthcare services.

Definitive Continuum for the NP and the CNS

In an effort to distinguish the NP and CNS roles, Bryant-Lukosius [12, 13] clarified the essential distinctions between these two categories of nurses through an advanced practice nursing continuum model. In placing clinical practice as a core feature, the model emphasizes that the CNS focuses more on indirect care supporting clinical excellence from a systems approach, while the NP focuses more on direct patient care within diverse clinical settings. While this research demonstrated that there are many common features between the NP and CNS, the main difference between the NP and CNS is viewed as related to greater CNS participation in non-clinical (indirect) activities related to support of systems, education, publication, professional leadership, and research. In addition, study findings demonstrated that participation in direct clinical care was high for both the NP and the CNS, but differences in scope of practice were reflected in greater NP focus in diagnosing, prescribing, and treating various conditions or illness. Similar to these findings, additional research [10, 14, 15] underscores that NPs engage in direct clinical care activities to a greater extent than CNSs.

ICN Position on the Clarification of Advanced Practice Nursing Designations

In providing Guidelines on Advanced Practice Nursing 2020 [1], ICN took an official position on the clarification of advanced nursing designations. The intent of the guidance paper is to promote continued discourse on the concept of advanced practice nursing while also seeking consistency in how APNs are identified and integrated into diverse healthcare systems globally.

The ICN position advises that not only do educational programs need to be specific to NP or CNS practice but relevant policies and a professional standard are needed to promote the inclusion of NP and CNS roles into provision of healthcare services.

To support and facilitate the potential for the NP and the CNS, ICN proposes that there is a need to:

- *Promote clarity of CNS and NP practice.*
- *Identify how these nurses contribute to the delivery of healthcare services.*
- *Guide the development of educational curricula specific to the CNS and NP.*
- *Support these nurses in establishing advanced practice (CNS or NP) roles and levels of practice.*
- *Offer guidance to employers, organizations and healthcare systems implementing the CNS and NP.*
- *Promote appropriate governance in terms of policy, legislation and credentialing [1] p. 23.*

Tables 1, 2, and 3 are offered by ICN in an attempt to bring clarity to these two categories of advanced practice nurses. Table 1 identifies characteristics of the CNS and the NP. Table 2 compares the similarities between the CNS and NP. Table 3 identifies attributes that differentiate the CNS and NP.

Table 1 Characteristics of clinical nurse specialists and nurse practitioners

Clinical nurse specialists	Nurse practitioners
Defined scope of practice in an identified specialty	Comprehensive scope of practice specific to the NP with activities that include prescribing, diagnosis, and treatment management
Provides direct and indirect care usually to patients with an established diagnosis	Commonly provides direct clinical care to patients with undiagnosed conditions in addition to providing ongoing care for those with an already established diagnosis
Works within a specialist field of practice	Works generically within a variety of fields of practice and settings
Works in defined practice populations (e.g., oncology, pain management, cardiology)	Works with multiple diverse practice populations
Works autonomously and collaboratively in a team, using a systems approach, with nursing personnel or other healthcare providers and healthcare organizations	Works autonomously and in collaboration with other healthcare professionals

(continued)

Table 1 (cotinued)

Clinical nurse specialists	Nurse practitioners
Frequent shared clinical responsibility with other healthcare professionals	Assumes full clinical responsibility and management of their patient population
Works as a consultant to nurses and other healthcare professionals in managing complex patient care problems	Conducts comprehensive advanced health assessments and investigations in order to make differential diagnoses
Provides clinical care related to an established differentiated diagnosis	Initiates and evaluates a treatment management plan following an advanced health assessment and investigation based on conduct of differential diagnoses
Influences specialist clinical and nursing practice through leadership, education, and research	Engages in clinical leadership, education, and research
Provides evidence-based care and supports nurses and other healthcare professionals to provide evidence-based care	Provides evidence-based care
Evaluates patient outcomes to identify and influence system clinical improvements.	Frequently has the authority to refer and admit patients
May or may not have some level of prescribing authority in a specialty	Commonly has prescribing authority

Source: With Permission. https://www.icn.ch/system/files/2021-07/ICN_APN%20Report_EN.pdf

Table 2 Similarities between clinical nurse specialists and nurse practitioners

CNSs and NPs
<ul style="list-style-type: none"> • have a master's degree as a minimum educational qualification • are autonomous and accountable at an advanced level • provide safe and competent patient care through a designated role or level of nursing • have a generalized nursing qualification as their foundation • have roles with increased levels of competency that is measurable • have acquired the ability to apply the theoretical and clinical skills of advanced practice nursing utilizing research, education, leadership, and diagnostic clinical skills • have defined competencies and standards which are periodically reviewed for maintaining currency in practice • are influenced by the global, social, political, economic, and technological milieu • recognize their limitations and maintain clinical competencies through continued professional development • adhere to the ethical standards of nursing • provide holistic care • are recognized through a system of credentialing

Source: With permission. https://www.icn.ch/system/files/2021-07/ICN_APN%20Report_EN.pdf

Table 3 Differentiating the clinical nurse specialist and the nurse practitioner

Advanced practice nursing		
	Clinical nurse specialist	Nurse practitioner
Education	Minimum standard of a master’s degree Accredited program specific to the CNS Identified specialty explicit to CNS practice	Minimum standard master’s degree Accredited program specific to the NP Generalist—Commonly PHC or Acute care explicit to NP practice
Definition	Expert advanced practice clinicians providing direct complex specialty care along with a systems approach to the provision of healthcare services	Autonomous clinicians who are able to diagnose and treat conditions based on evidence-informed guidelines
Scope of practice Job description	Specialty practice aimed to ensure and develop the quality of nursing, foster the implementation of evidence-based nursing, and support the hospital or organization’s strategic plan for provision of healthcare services by providing direct and indirect healthcare services. The CNS provides leadership in advancing nursing practice including research and interdisciplinary education	Comprehensive healthcare practice, autonomous examination, and assessment of patients that includes initiating treatment and developing a management plan. Management commonly includes authority to prescribe medications and therapeutics and conducting referrals along with monitoring acute and chronic health issues, primarily in direct healthcare services. Practice includes integration of education, research, and leadership in conjunction with the emphasis on direct clinical care
Work settings	Commonly based in hospital or healthcare institutional settings with a specialty focus	Commonly based in PHC and other out-of-hospital settings or acute care
Regulation	Legally protected title	Legally protected title
Credentialing	Licensure, certification, or authorization by a national governmental or nongovernmental agency specific to practice as a CNS. Submission of evidence of completion of a CNS program from an accredited school of nursing	Licensure, certification, or authorization by a national governmental or nongovernmental agency specific to practice as an NP. Submission of evidence of completion of an NP program from an accredited school of nursing
Policy	An explicit professional standard including specific criteria and policies to support the full practice potential of the CNS	An explicit professional standard including specific criteria and policies to support the full practice potential of the NP

Source: With permission. https://www.icn.ch/system/files/2021-07/ICN_APN%20Report_EN.pdf

Conclusion

There is a continued need to promote discussion to clarify the characteristics and value of the NP and the CNS in order to effectively meet the changing healthcare demands of diverse populations and healthcare systems globally along with addressing the changing dimensions of nursing practice. Both the NP and CNS represent innovations that have challenged the status quo of the nursing establishment and the manner in which healthcare services are provided in diverse settings. This chapter highlights key aspects of the NP and CNS roles. In addition, the chapter attempts to promote an ongoing dialogue in order to provide a convincing foundation for moving forward in support of the potential of these advanced practice nurses.

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Nurse Practitioner Education and Curriculum: A US Focus

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Introduction

The foundation for nurse practitioner (NP) practice requires sound educational preparation. Worldwide, there are a multitude of ways to become an NP. Today the complexity of patient situations and healthcare delivery as well as changes in practice continue to alter the landscape of healthcare. Changes in practice over the decades have required new approaches to NP education including understanding policy, process, outcome measurements and analysis, healthcare finance, and evidence-based methods to plan and implement care [1].

History and Evolution of NP Education

The need for consistent and formal nursing education was obvious to Florence Nightingale when she opened the first science-based nursing school in London in 1860 [2]. This approach to nurses' training would eventually transform nursing into a profession and alter how healthcare was delivered. One hundred years later, from this focused area of general nursing education, the NP role emerged with various methods of NP education.

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Before the concept of the advanced practice nurse (APN) emerged, the legal scope of practice for nurses excluded diagnosing and treating medical issues. Nurses were expected to follow the nursing process as well as carry out physician orders. In the 1960s the physician shortage was peaking in the United States, and it became evident that this shortage, along with limitations for nurses to make medical diagnoses, restricted access to healthcare for the medically underserved, especially children in urban and rural areas [3]. Advances in care delivery and technology identified that there would be a need for a new type of primary care provider. Further, several policies also assisted with the development of the NP role including the Hill-Burton Act of 1946 that provided funding to hospitals and other health facilities, the development of Medicare and Medicaid in 1965, and the Comprehensive Health Manpower Shortage Act of 1971. This legislation provided economic resources to expand the US healthcare system dramatically [3].

The first program for nurse practitioners was founded in 1965 at the University of Colorado by a nurse, Dr. Loretta Ford, and a pediatrician, Dr. Henry K. Silver [4]. As faculty in Public Health Nursing at the University of Colorado, Dr. Ford identified a need for pediatric providers. According to her, "...the pediatric nurse practitioner role, was devised to improve the health and wellbeing of children by increasing access to providers fully able to provide care" [4]. From that point, the role of the NP has evolved and grown to include all ages from neonates to older adults and diverse healthcare settings including acute care, primary care, and specialty settings. Development of the NP role in the United States initially focused on populations rather than generalists, which has resulted in difficulty in regulation and licensing. Certification areas include family health, adult-gerontology primary care, psychiatric-mental health, adult-gerontology acute care, pediatric-primary care, pediatric-acute care, neonatal, and women's health/gender related. The urgency of nurses to fill these advanced roles resulted in several postbaccalaureate certificate programs, most including less than one year of training and not including a bachelor of science degree [5].

By 1973, there were over 65 NP programs in the United States, mostly offered as postgraduate certificates, while some granted master's degrees [3]. As NP programs proliferated, legislative initiatives altering state laws and nurse practice acts supported NP role expansion. By the mid-1970s, many states began proposing laws granting prescriptive authority to NPs. Additional issues that continued to face NPs were the lack of recognition as "primary care providers" by managed-care plans and achieving legal authority to medically manage patients within the NP scope of practice without physician supervision or collaboration. Because of the expanding NP role, by the 1990s the National Organization of Nurse Practitioner Faculties (NONPF) published a statement calling for NP education to be grounded at the graduate level [3]. This initiated a shift away from certificated NP programs and spurred discussion regarding the best academic methods to educate NPs on the complex knowledge and skills needed to enter advanced practice roles.

Education for NPs

NP graduate education is designed to build upon the foundational knowledge and experience obtained as a professional nurse. The objective of any educational program, regardless of disparities in international education standards, must be to prepare NP students for advanced clinical practice in a safe and effective manner.

US Entry into Practice

Currently in the United States, NPs must earn a graduate degree in nursing and may be required to pass a national certification exam in order to begin their practice as an NP [6]. For several decades after NONPF promoted graduate-level education as the degree for NP entry in the profession, the progression of nursing education swirled around the “entry into practice” debate for both registered nurses (RNs) and NPs. In 2011, the Institute of Medicine responded to increasing demands in nursing and healthcare with a statement affirming nurses must promote seamless academic progression by seeking higher levels of education and training through innovative education systems [7]. The nursing community realized that the key issue is the need for a highly educated NP workforce not the educational entry point.

The ongoing relationship between education and practice will endure. One cannot think about clinical issues and nursing education in silos. Instead, practice and education combined play primary roles in discovering improvements for every NP population focus area.

Global Entry to Practice

In 2002, the International Council of Nurses (ICN) recommended a master’s degree as the entry-level degree for the APN. Since that time, the worldwide development of the NP role has matured to meet the healthcare needs of communities but not uniformly [8]. The fact that in 2022 nearly all countries reported the master’s degree as the primary level of education for APNs is evidence the 2002 ICN recommendation has had an impact [8]. ICN recognizes that the context and identification of advanced nursing vary in different parts of the world and many countries may not share the goal of a master’s degree as the minimum NP requirement [6]. Different nations have disparate standards regarding minimum education requirements for registered nurses. It is not surprising that NP standards vary from country to country as well [9].

Several nations face barriers such as funding and lack of resources that impact how they approach changing educational requirements for APNs. Regardless, the ICN recommendations serve as a blueprint for countries who are starting or evolving their NP education programs.

To meet the minimum requirements of a master’s degree for APNs, some nations have been sending NP students to other countries that offer NP programs at a

master's level and then relocating them back to their home country upon completion of the program. With the proliferation of online education, educating future NPs from around the world in a virtual platform has become an even more promising method of ensuring APNs everywhere are master prepared. Virtual platforms have been instrumental in providing didactic opportunities for students globally. However, clinical components of APN education are important for competency of APN students. Many online or virtual programs assist students in ensuring that their clinical needs and hours are met through virtual touch points between faculty, students, and preceptors.

Another limitation impacting global NP educational requirements is the title for advanced practice nurses. In some countries, the title of APN and NP vary, setting specific educational standards to each respective title. For example, in the United States, APN is an umbrella term for registered nurses with graduate education and a national certification, with the NP role falling under the APN title. The ICN clearly denotes both APN and NP roles. The varying entry to practice to the APN or NP role worldwide is a barrier for the excellent patient care that NPs and APNs deliver.

NP Educational Path to Practice

The path to practice as an NP can be distinct for each NP. In 2010, *The Future of Nursing: Leading Change, Advancing Health* was published by the Institute of Medicine which recognized the unique role nurses play in the complex healthcare system within the United States. Key takeaways from the report included that nurses should practice to the full scope of their education and training and that nursing education should be improved where nurses could achieve higher levels of education. This report has helped to shape the direction of graduate nursing education in the United States [7].

NONPF was established in the 1970s as a guiding framework for NP curricula. The organization now represents most NP programs in the United States as well as some programs in Canada and the United Kingdom [10]. NP programs must provide an educational framework that prepares new graduate NPs to enter practice with core competencies for safe and effective practice. Starting in 1990, NONPF published NP Role Core Competencies to ensure that NPs had the “knowledge, skills, and abilities that are essential to autonomous clinical practice” [11].

In addition to the NONPF core competencies, the American Association of Colleges of Nursing (AACN) created Essentials for graduate education. These Essentials address domains that “represent the essence of professional nursing practice and the expected competencies for each domain” [12]. The AACN Essentials were revised during 2020 and 2021. The new Essentials focused on four key areas of healthcare: wellness and disease prevention, chronic disease management, regenerative/restorative care, and hospice/palliative care. From those key concepts, ten domains were created that align with the changing landscape of healthcare and consider a wider view across the spectrum of wellness to illness including

patient-centered care, professionalism, and interprofessional experiences. Competencies within the domains are leveled to focus on either pre-licensure or graduate-level education, with an emphasis on Doctor of Nursing Practice (DNP) for entry into practice for NPs [12].

In the United States, as NP programs develop and revise their curricula, the NONPF competencies and AACN Essentials must be foundational to all curricular decisions. There has been a shift to competency-based educational preparation. This is to ensure learners graduate with “a system of instruction, assessment, feedback, self-reflection, and academic reporting that is based on students demonstrating that they have learned the knowledge, attitudes, motivations, self-perceptions, and skills expected of them as they progress through their education” [12]. The move to competency-based education also aligns with the graduate’s ability to transition into practice smoothly. Once in practice, the NP is held accountable to competencies within their population area, so this work was done to augment a more seamless transition [12].

With successful completion and graduation from an accredited NP program, the NP graduate is eligible to sit for the standardized national certification exam. These competency-based exams focus on proficiency and knowledge in providing advanced care to patients. The exams are legally defensible and psychometrically anchored, and the certification programs are accredited by the Accreditation Board of Specialty Nursing Certification (ABSNC) and the National Commission for Certifying Agencies (NCCA).

NP Curriculum Development

The curriculum establishes the depth and breadth of requisite knowledge and skills for student success in the NP program as demonstrated through NP student learning experiences, testing, and overall evaluation [13].

In 1974, NP educators held their first national meeting. Between 1976 and 1980, NONPF focused on establishing curriculum guidelines for NP education. During this time the National Task Force for Family Nurse Practitioner Curriculum and Evaluation developed its guidelines, and, in 1980, the University of New Mexico published curriculum guidelines for Family Nurse Practitioner Curriculum planning.

The professional role of the NP relies on research and nursing theory, which, in turn, are dictated by the educational model of the NP program. NPs are responsible to analyze, synthesize, and apply knowledge to their practice. Further, NPs must understand how to integrate current research into patient care [14].

A crucial move toward furthering the educational preparation of NPs is standardizing curriculum within NP programs worldwide. Currently, educational content is based on opposing curriculum models: both “specialist” and “generalist.” Concerns regarding defining a singular curriculum model include [1] a lack of resources to move curriculum in a singular direction and [2] ensuring that all APN competencies are in line with the singular curriculum direction.

To clarify curriculum direction, the ICN has taken the first step by clarifying terminology and untangling mixed definitions for APNs that persist worldwide [6]. The ICN proposed this definition of the APN in 2020:

a generalist or specialized nurse who has acquired, through additional graduate education (minimum of a master's degree), the expert knowledge base, complex decision-making skills, and clinical competencies for Advance Nursing Practice, the characteristics of which are shaped by the context in which they are credentialed to practice (adapted from ICN, 2008). The two most commonly identified APN roles are clinical nurse specialist (CNS) and NP [6].

Curriculum Design

Globally, curriculum includes similar content and structure. Two main tenants of global NP or APN curriculum are addressing the professional role and autonomous practice [14]. Within the professional role content, the following are topic areas that are generally covered in NP and APN programs worldwide: research and nursing theories, leadership and collaboration, and organizational, political, economic, regulatory, and legislative issues [14]. APN and NP educational programs also include content related to becoming an autonomous practitioner including health promotion and disease prevention. These general themes are provided in foundational, clinical, and didactic courses.

Competency and Curriculum Mapping

The AACN Essentials and the NONPF competencies should be used in parallel when designing and revising curricula for NP programs. In 2021, AACN published the updated Essentials: Core Competencies for Professional Nursing Practice. The major difference is that these essentials now align with all undergraduate and graduate students and are competency-based. Domains are leveled for the pre-licensure student and graduate-level (advanced-level nursing) education and are based on achieving a set of competencies within each one. This is a very different approach than prior updates and will improve the transition into practice tremendously [12]. To ensure these frameworks are met, faculty should map content across the program and create crosswalks in the form of tables or charts to ensure the concepts represented in the Essentials and competencies are included within the courses. These tables should be adapted for each course to highlight for learners how the course content and objectives align with the Essentials and competencies. A mapping tool could also be developed for specific advanced practice areas that demonstrate to learners how their program is preparing them to meet with Essentials and competencies when they graduate from the program and enter practice as an NP.

The process of developing a mapping tool includes six steps: deciding which areas of the curriculum to map, completing a curriculum needs assessment, mapping the current curriculum, mapping the new curriculum, implementing the curriculum changes, and evaluating it [15]. The first step in curriculum mapping is to decide which areas of the curriculum to map so that faculty can identify gaps or needs in the curriculum. Then a needs assessment should be completed. Faculty should identify any of the requirements for program accreditation (e.g., AACN

Essentials, NONPF competencies). Faculty can consider mapping curricular content to certification testing domains as well. Next, it is imperative to map the current curriculum including the course content, lectures/modules, and supportive course materials to the identified requirements for program accreditation. Mapping the current curriculum will help faculty to identify gaps and duplications in the curriculum related to program accreditation. The next step is to map the new curriculum based on the gaps and duplications from the current curriculum. Implementing the curriculum changes includes revising the new course content from lectures/modules, assignments, and supportive course materials based on the new curriculum. Finally, ongoing evaluation is vital for students. Utilizing continuous quality improvement methods for evaluating the curriculum can allow for frequent updates of course content as accreditation standards and evidence-based guidance changes [15] (Figs. 1 and 2).

Innovations in NP Education

The future of NP education is bright. There are many new educational modalities that aim to address the needs of NP students and the growing faculty shortage. Further, there are efforts to standardize entry into practice.

DNP as an Entry to Practice

Although the goal of ensuring a DNP is the entry-level degree for the NP by 2025 in the United States, this transition has been discussed by governing bodies since the early 2000s. In October of 2004, the AACN published a position statement supporting the DNP practice degree for entry into practice for advanced practice registered nurses (APRN) across four areas: certified registered nurse anesthetist (CRNA), NP, clinical nurse specialist, and certified nurse midwife. Starting in January 2022, all CRNA students must matriculate into a doctoral program. NONPF has stated that NP programs should shift to DNP only by 2025 [17]. Their conclusions were based on the increasing complexity of healthcare with individuals and populations. The consensus is that with doctorally prepared NPs in clinical practice settings, quality of care and patient outcomes will improve [18].

The DNP is a practice degree that focuses on quality improvement, which differs from a Doctor of Philosophy (PhD), which is based on research. DNP-prepared nurses focus on implementation science and evidence-based practice. According to the Centers for Medicare and Medicaid Services (CMS), quality improvement allows healthcare teams to close gaps in care and systematically standardize best practices [19]. This federal recognition of the need to implement quality improvement frameworks to address care needs is a testament to the DNP in practice. The DNP is trained specifically to close the gap between research and practice and develop ways to improve care in a sustainable fashion [20]. In combination with the medical and PhD partners, a DNP-prepared NP can truly engage in improved patient



Fig. 2 Example curriculum mapping student tool

care at all levels [9]. Yet, the debate about the value of the DNP continues due to the lack of standardized programs, uncertainty over DNP practice versus master’s-prepared NPs, and the domination of DNP programs to prepare educators and administrators [21].

NP Education Delivery Methods

NP educational programs vary in delivery type either completely online, a hybrid of online and on-campus opportunities, or more traditional delivery methods of in-person instruction.

In-Person

In-person educational programs refer primarily to learning experiences where students meet face to face in a physical location with their instructors and peers according to a course schedule. This helps to establish a rapport with faculty and build relationships among students. This traditional method of instruction also allows students to take advantage of campus services. However, this requires a significant time commitment and travel to campus, and many students may prefer an online format and hybrid options discussed below.

Online and Hybrid

Conventionally, hybrid learning refers to a combination of asynchronous and synchronous learning experiences where the synchronous learning takes place in-person at a college campus. Since the evolution of online learning resources and the COVID pandemic, many institutions offer virtual synchronous learning experiences. The terms hybrid and online learning experiences are used relatively interchangeably. Some institutions use “online” terminology for learning experiences that are entirely asynchronous, where the onus is on the learner to complete all their assignments and readings independently. These programs may offer in-person immersion experiences for a few days during the semester. Some institutions use the word “hybrid” to refer to a combination of remote and in-person experiences. While other institutions use the word “hybrid” to denote a combination of asynchronous

experiences and virtual synchronous learning experiences. In our discussion, we refer to online learning as the modality where students have a combination of asynchronous and synchronous learning experiences and are not required to be present at a physical college campus.

Recognizing the need for more nurses in our workforce and the cost and time constraints, online programs offer flexible opportunities for students. Blended learning programs where nurses can complete their course work asynchronously while working part-time or full-time in their clinical practice and applying their knowledge to improve their skills can address the workforce needs. The combination of hands-on practice and time to reflect, work in small groups at their own pace, and acquire new knowledge to advance their careers can be a sustainable solution. As the aging nursing faculty retire, this also creates a scalable solution for universities to offer short, synchronous teaching sessions and engage faculty who are not limited to being in a physical location for the didactic lectures and class discussions. Video conferencing tools have made a lot of progress, especially since the pandemic. A combination of educational technologies can be implemented to ensure engagement, student collaboration, and frequent communication with and among teaching faculty. Further, the advances in simulation tools, the utilization of standardized patients, and the integration of immersive and virtual realities are facilitating innovative solutions to educational challenges.

Supervised Clinical Practice

Each of these delivery types require supervised clinical practice. The translation of the didactic components into practice through supervised clinical practice is an essential component of NP education, yet these components vary among titles and roles worldwide. The recommended number of direct or indirect clinical hours under supervision lacks consistency worldwide. The majority of programs report 500 hours of clinical practice, with a range of 300 to 1490 hours, worldwide [8].

Innovations in supervised clinical practice hours are being studied. Recently, some programs have explored the option of virtual precepting for NP students [22]. Virtual precepting during telehealth visits may be an option for increasing the access to preceptors for NP students. It is noted that standards for virtual precepting must be established [22].

Instructional Design for Adult Learners

It is imperative that NP faculty utilize adult learning theory to design meaningful and effective course instruction. Since 1980, Malcolm Knowles has been credited with the theory of adult learning. He explained how andragogy, which pertains to adults, is different from pedagogy, which discusses learning among children. Specifically, adults need to know why they are learning something, how it will help them with their work, and how they might be able to connect this to prior knowledge or skills [23]. Adults like to oversee their own learning. Relevance is an important component of adult learning. This makes it more important to offer short,

just-in-time training sessions for adults that allow them multiple opportunities to make connections and apply their new knowledge and skills.

As we design programs for adult learners, instructional designers and faculty must bear in mind these principles to create engaging learning experiences. The importance lies in the connections that adults can establish with the content and among each other. Adequate social presence and faculty presence that helps to make these connections, without isolating learners, are important components of adult learning programs.

The future of healthcare calls for digital literacy, which can be established through a well-designed online nursing program. By integrating online course quality standards such as the Quality Matters framework and engaging instructional designers to collaborate with faculty and institutions to create meaningful online learning experiences, we can move the needle on nursing education.

Interprofessional Education and Practice

In recent years, the momentum to educate professionals as teams has grown. Another important addition to the NP curriculum is interprofessional education and practice (IPEP). According to the Institute of Medicine in 2015, interprofessional teams are able to coordinate care better, improve patient care outcomes, and potentially improve the cost of care [24]. To that end, in 2015, the Health Resources and Human Services Administration (HRSA) recommended several opportunities to improve access to interprofessional education including funding ideas and complete support of growing programs. There is still much work to be done, but successful IPE programs across the country are showcasing their outcomes in graduating the prepared interprofessional.

Simulation

Simulation education modalities are another important tool for augmenting the traditional NP education models. Simulation methodologies offer the opportunity to design systematic and standard approaches to gaining knowledge, developing skills, and enhancing critical thinking as an NP [25]. To fully implement the new competency-based approaches to developing practice, the use of simulation methods and assessment will be paramount.

Simulation has grown tremendously in both scope and technology over the last 20 years across the healthcare profession [25]. From emergency management to innovative team-based scenarios, simulation can augment NP instruction in a valuable way. The COVID-19 pandemic accelerated the use of other technologies that support hybrid simulation as well as virtual reality and online gaming [25]. All of these opportunities now exist to provide NPs the chance to learn and make mistakes in a safe environment [26]. The use of sound debriefing post simulation as well as guided reflection can also drive critical thinking skills and improve knowledge

overall [27]. To that end, all NP programs must find ways to engage in simulation activities throughout their program. Connecting the objectives of simulation activities to the competency-based competencies can help maintain the direct connection to academic goals while promoting a skilled and safe graduate.

Conclusion

NP and APN education vary in delivery method, content, and entry to practice globally. However, there is a call to action to standardize NP and APN education worldwide. Innovations in global NP education include delivery methods (in-person versus virtual), the inclusion of interprofessional education and practice to NP programs, and the use of simulation. NP curriculum must be based on a set of standards, for example, NONPF, AACN, or ICN standards. The strategy to ensure NP curriculum is meeting global or national standards is to map the NP curriculum to global or national standards. Despite the ongoing need for global standardization of NP education, there has been so much work done since the development of the NP role in the 1960s. NPs and APNs have been providing excellent care to patients around the world for over half of a century.

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NP Practice Competencies

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Introduction

Professional health educators have defined practice competencies for years. *Practice competence* is the ability to successfully and efficiently demonstrate a mastery of a set of skills [1]. Competencies are designed to be observable, realistic, and measurable. The definition of competencies and competence most familiar to educators in the United States is that of the American Association of Colleges of Nursing (AACN), an adoption of Frank, Snell, and colleagues [2, 3].

Competencies: An observable ability of a health professional, integrating multiple components, such as knowledge, skills, and attitudes [2].

Competence: The array of abilities (knowledge, skills, and attitudes) across multiple domains or aspects of performance in a certain context. Competence is multi-dimensional and dynamic. It changes with time, experience, and settings [2].

Practice competence is attained through the assessment of NP competencies; they are important in defining an NP's scope of practice. The key to designing a set of competencies is that they can be measured. Once all the competencies have been

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observed and evaluated, a determination can be made that the NP student has demonstrated the skills necessary to safely move into the workforce.

This chapter describes the way in which competencies and competency-based curricula are developed. Although the ICN/APNs is working toward global competencies, there is not a standard consensus on global advanced practice nurse (APN) competencies. This chapter suggests domain and competencies based on a review of the Strong Model, as well as competencies from countries that have published them [4]. Frameworks to incorporate competencies into an APN school or program are included.

How Are NP Competencies Developed?

The development of competencies has progressed differently from country to country. In some countries, regulatory bodies propose competencies, while in others, it may be a professional organization. For example, the Canadian Entry-to-Practice Competencies for Nurse Practitioners underwent an extensive revision in 2018. Beginning in 2012, the Canadian Council of Registered Nurse Regulators established a national working group of representatives from all Canadian nursing regulatory bodies. Surveys were sent to Canadian NP education programs to help ascertain gaps between education and competency. After a robust practice analysis, the competencies were pilot tested with practicing NPs. The combined information led to the release of the 2018 Canadian Entry-to-Practice Competencies for Nurse Practitioners [5].

Similarly, in the United States, AACN—a professional organization representing schools and programs of nursing—embarked on revisions to competencies for all levels of nursing. Experts were appointed to a workgroup and input was solicited multiple times from stakeholders. This iterative process led to the April 2021 release of *The Essentials: Core Competencies for Professional Nursing Education*. The document indicated a need for specific NP competencies, as it provided competencies for all APNs.

In 2020, the National Organization of Nurse Practitioner Faculties (NONPF) began to revise the 2016 *NP Role Competencies*. Completed in April 2022, they scaffolded down from the AACN *Essentials* and defined the specific knowledge and skills necessary for NPs. The competency revision processes included obtaining feedback from faculty, deans, and other stakeholders at multiple points during the drafting period. The final 2022 NONPF *NP Role Core Competencies* are integrated with and complement the registered nurse (RN) and APN competencies.

In many professions, standard documents that outline NP practice competencies and official competencies are one and the same. This is the case in England and Australia. Standards for NPs in Australia are built and expanded upon RNs' requirements. A master's degree is necessary [6]. In England and surrounding Nations such as Wales, Scotland, and the Republic of Northern Ireland, advanced practice is viewed as a level of practice and not just a role [5].

The Australian National Nursing and Midwifery Registration Board (NMBA) of the Australian Health Practitioner Regulation Agency focuses on NP clinical attributes including research, education, and leadership that can be applied to clinical

care. Research is tailored toward processes to improve upon evidence-based care and quality management, education related to focus of care, and leadership and the support of others through clinical supervision or mentoring [6]. These attributes are blended with four focused standards for NPs. These focused standards require that an NP (a) assesses and uses diagnostic capabilities, (b) plans care and engages others, (c) prescribes and implements therapeutic interventions, and (d) evaluates outcomes and improves practice [6].

England, Wales, Scotland, and Northern Ireland begin the framework by defining advanced practice. The Royal College of Nursing defines advanced practice as a level of practice, rather than a type of practice. NPs are educated at the master's level in clinical practice and have been assessed as competent in practice using their expert clinical knowledge and skills. They have the autonomy and authority to act and can make decisions in the assessment, diagnosis, and treatment of patients. The core role and function follow four pillars of practice as per NP's standards. These are through clinical and direct care, leadership and collaborative practice, improving quality and developing practice, and developing self and others [5].

Regardless of the process used to develop competencies or the national organization responsible for leading the system, leadership must consider including all interested parties in the process. For example, regulatory agencies, accreditors, certifiers, educators, and health system and patients' representatives may be considered for participation, as well as the Ministry of Health and other health professional leaders. Competencies influence the scope of practice requirements, certification and licensing policies, accreditation standards, and institution credentialing. Many experts have also emphasized the importance of competencies being written to support competency-based education that meets social and patient needs. Therefore, the NP competencies create a foundation of education that is driven by the needs of the patient and society. The drafting and release of NP competencies is an extensive process and one that should not be rushed.

How Are NP Competence Established?

In 2020, the ICN published the *Guidelines on Advance Nursing Practice*, in celebration of the International Year of the Nurse and Midwife by the World Health Organization. It was a call for the progression of APN globally, as well as a workforce to promote, prevent, and manage illness to the full scope of practice [7]. Communicating the role of the APN was critical to facilitate an understanding for others who influence the profession, such as the public, policymakers, and educators.

The *Guidelines* introduces the concept of an NP and articulates that NP practice is an extension of individual basic nursing practice education. Supported by ICN/APN and acknowledged in several different countries' documents, there are several assumptions commonly found. One assumption is that an NP is an RN who has advanced clinical training beyond their initial professional RN preparation. Other commonalities include the idea that (a) NP competencies build on RN competencies to expand upon the knowledge, skill, and abilities

achieved at that level; (b) NPs practice in coordination/collaboration with healthcare professionals and other individuals; and (c) NP programs have a clinical component [7].

Additional shared elements found in some countries' NP competencies documents (but not all) include the following: (a) NPs require graduate nursing education; (b) NPs are educated to practice across setting and individual populations; (c) NPs are licensed, independent practitioners and can practice autonomously [7].

Prior to the release of the 2020 *Guidelines*, earlier work defined the global features of NP scope of practice and the competencies. In 2017, the ICN/APRN Network Research subgroup compared the Strong Model of APN and the ICN/APN Competencies with APN competencies from 19 countries [4].

The Strong Model (2000) outlines domains and the associated competencies:

- Domain 1: *Direct Comprehensive Care* (15 competencies)
- Domain 2: *Education* (6 competencies)
- Domain 3: *Support of Systems* (9 competencies)
- Domain 4: *Research* (6 competencies)
- Domain 5: *Publication and Professional Leadership* (6 competencies) [4]

The ICN/APN Network Research subgroup work has been fundamental in defining global APN competencies. The subgroup found that 19 participating countries' programs supported many of Domains 1–4 elements, but Domain 5 was less likely to be represented in the program's curriculum [4].

These researchers continue to explore this and other methods of analysis, such as cluster mapping, to understand the global landscape of APN education and competencies. Sastre-Fullana and colleagues' (2021) secondary analysis of the information provided by the 19 countries that participated in the ICN/APRN Network Research subgroup found that by employing the Strong Model and mapping the information, users may visually identify common concepts and linkages. Their findings revealed wide variation in the APN programs globally. The author remarked that more work is needed in this area to propose a core set of competencies that will work for APN education globally [8].

A review of published NP competencies from different countries and the ICN/APN Network Research subgroup report revealed commonalities. These competencies are similar to the Strong Model domain competencies. As the APN scope of practice evolves, the terms used have also evolved to reflect education knowledge and skills at the advanced level. For example, the *science of practice* describes the translation of research to practice, which is more commonly seen in APN programs [9]. This section depicts common elements that are used to formulate program NP competencies. It is not inclusive but describes some general competencies that are found in different countries' published competencies documents, including AACN *Essentials*, CNO's *Entry-to-Practice Competencies for Nurse Practitioners*, NONPF's *NP Role Core Competencies*, NMBA's *Nurse Practitioner Standards for Practice*, and RCN's *Advance Level Nursing Practice*.

Science of Practice

The use of evidence and best practice informs practice decisions. This element aligned with aspects of the Strong Model Domain 4, which includes research NPs integrating, translating, and applying scientific knowledge into practice daily [4]. The NP's role in the research environment is to translate research discovery into practice for all members of the healthcare team. NP and nurse researchers frequently collaborate on study design to provide the practice components to the nurse researcher. Also included in this element is the science of quality improvement (QI). QI is important because it focuses on implementing new knowledge and evidence into practice or the healthcare delivery systems.

In general, this competency would include:

- Applying theories, research, guidelines, and best practices from nursing and other sources to inform practice
- Critically appraising current and emerging evidence from diverse sources to inform practice decisions
- Evaluating quality and outcome using quality improvement principle
- Participating in quality improvement to develop a new system of care
- Participating in research
- Implementing quality improvement and research into practice
- Using information to manage risk and build a culture of patient safety
- Contributing to the evaluation of NP practices on patient outcomes

Care of an Individual and Population

This element is highly representative of the NP and a major factor in determining scope of practice. The person-centered approach of NPs providing care requires knowledge, skills, and abilities at an advanced level. It is very similar to the Strong Model Domain 1 (direct comprehensive care). Management of care may be provided to an individual [4]. However, care management must consider the family and community. Care can be provided in different settings for individuals with routine health needs, as well as stable, chronic, acute, or critical conditions. Partnering with the patient to achieve individual self-care outcomes and patient education is central to this element. It frequently overlaps with competencies in other elements specifically related to interprofessional team care and care that is population-specific, cost-effective, and safe.

Competencies to achieve this for individuals include:

- Incorporating health promotion in an individual's care plan
- Integrating advanced assessment, by:
 - Obtaining comprehensive or focused health, family, social, spiritual, and medical information
 - Conducting a physical examination based on age and history

- Ordering test(s) and/or performing procedure(s) both for preventive care and history and
- Identifying health risk factors and social determinants of health factors.
- Diagnosing actual or potential health problems and needs by:
 - Analyzing physical finding
 - Distinguishing normal, variation of normal, and signs of pathology, and
 - Utilizing diagnostic reasoning to formulate an actual or differential diagnosis.
- Managing care for the individual in the context of the family and social structures by:
 - Developing a mutually acceptable, cost-conscious, and evidence-based plan of care
 - Using pharmacological and non-pharmacological interventions
 - Communicating health findings and plan of care
 - Respecting patients to make an informed decision about care, including end of life decisions
 - Developing a patient communication plan based on literacy and
 - Collaborating with other healthcare providers.
- Evaluating outcomes of care by:
 - Assessing the effectiveness of the plan of care
- Promoting self-care
- Creating community partnerships to support self-care management

Competencies to achieve this for populations include:

- Assessing population and subpopulation health risks and health needs using available data
- Collaborating with the community and public health providers to promote health and manage disease
- Collaborating with the community to develop and disseminate health messages
- Contributing to a culture of patient safety
- Incorporating diversity, safety, and socioeconomic determinants of health and using culturally competent care when planning and providing healthcare services

Health Systems Practice

NPs work in systems that inform patient and population care delivery models. Informing the health system's practices, policies, and procedures as well as engaging in QI efforts to improve the system leads to safe, quality, and equitable care. Strong Model Domain 3 (support of systems) outlines competencies that are indirect influencers of patient care. Additionally, communication technology and informants have grown over the years and can be used to understand models of care and services. A selection of competencies in this element includes:

- Collaborating in strategic planning to inform practice improvements
- Optimizing practices, policies, and procedures based on best practices and evidence-based care

- Advocating for financial policies and regulations to enhance the value of care delivery
- Identifying communication technologies and tools to maximize individual and population health
- Designing system improvement that provides safe, quality, and equitable care
- Designing preparedness structures to address disasters and public health emergencies
- Demonstrating collaboration and leadership on an interprofessional team

Leadership of Self and Other

The fourth element establishes competence to build leadership knowledge and skills to influence the professions and professional identity. The Strong Model Domain 5 (publication and professional leadership) influences the competencies in this element, but expands on the professional leadership of self. NPs professional maturity is developed over time, but starts with a good role model, ethical principles, and the understanding of legal parameters of practice. Membership in organizations that define nursing and medical practice provides a platform to inform practice and grow leadership skills. Engagement in organizations where policies and best practices are defined is encouraged. Essential to this element is one's health, safety, and well-being. This element's competencies may include:

- Demonstrating an NP professional identity
- Articulating the NP role in clinical, political, and professional contexts
- Demonstrating accountability to practice within the regulatory standard and scope of educational preparation
- Developing writing, negotiation, and influencing skills to advocate for practice improvement
- Developing scholarship for oneself and the NP profession
- Acting as an educator to students and all health professionals
- Fostering a professional work environment that promotes respect, equity, inclusion, and trust

Various countries articulated NP competencies differently. Nevertheless, they likely have several, if not all the elements described above. The above list is a sample of competencies that can be expanded on and added to with specific knowledge and skills each individual nation deems important [4–6, 9, 10].

How to Use Competencies Documents at the Institutional Level

Most academic institutions are accredited by a national commission. Through the accreditation process, initial materials provided to the commission include the institution's mission, vision, and institutional outcomes. Institutions, schools, and/or programs, such as a nursing program, write their specific program outcomes, goals,

and priorities based on the institution’s outcomes. Program outcomes are usually broad and used to develop the *program of study*, or the *curriculum*. The curriculum is comprised of courses that support learning and produce competent graduates. Each course has learning objectives and course outcomes. This pathway ensures school/program outcomes are congruent with the institution’s stated outcomes and these outcomes become specific/narrow focus at the course level. Specific assignments in courses are written to ensure students can meet the course objective, while the student outcomes show how students will achieve these objectives. In other words, the objectives focus on the desired learning, while the outcomes focus on the learning that occurred.

Courses and course objectives should be thought of as a progression of milestones that systematically build on prior coursework to achieve course outcomes and together achieve program outcomes. For this to be successful, course objectives are written to be measurable, and the course assignments must be observable. Hence, course objectives and assignments are tied to achieving competencies and a competent graduate (Fig. 1).

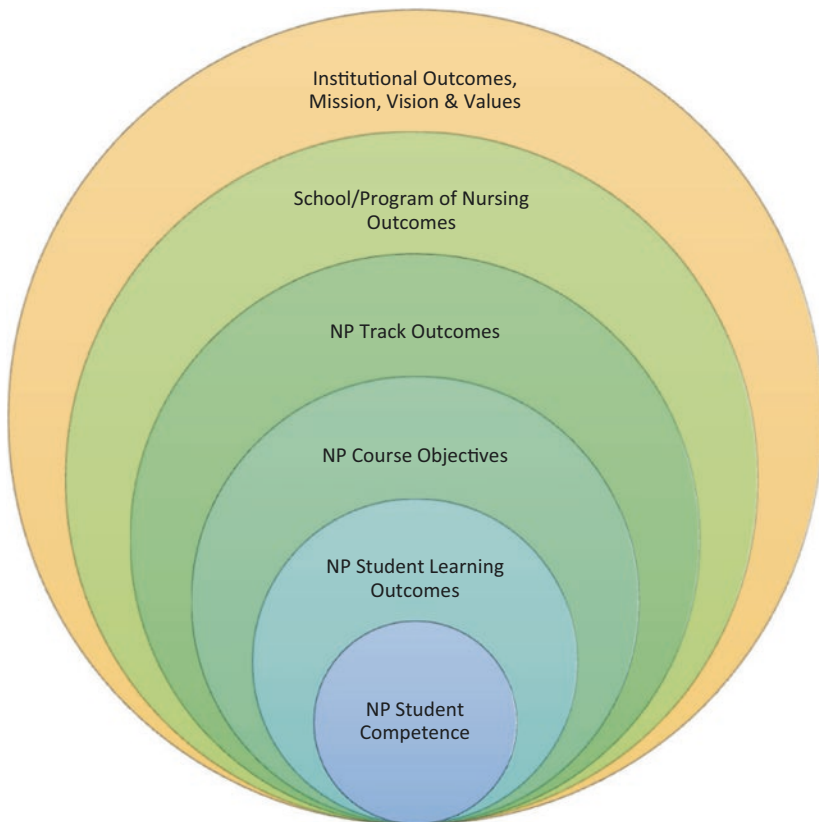


Fig. 1 Institution outcome to student competence

Students improve their knowledge base over time; therefore course sequencing and course objectives are designed to allow the learner to master the knowledge and skills needed to progress to higher-level courses.

Frameworks to Evaluation Competencies

Several frameworks can be used to measure student competencies over time. Many faculty use Bloom’s taxonomy in the development of course objectives. When using this method, a program of study that builds on prior coursework to create the optimal sequence of course objectives can be achieved. When using this method, you can advance the verbs for sequence of course objectives to achieve a program of study that builds on prior coursework. This framework recognizes that there is an order to learning. According to Bloom’s taxonomy, the lower level of learning is skills of knowledge, comprehension, and application. By achieving this level, learning can be achieved at a higher level, with skills of analysis, creation, and evaluation (Fig. 2).

Understanding a program of study’s design and the relationship of program outcome to course outcome and objectives assists in mapping competencies to individual courses. For example, using the competency, Diagnosing Health Needs, a student achieves learning at many levels and in several courses:

1. In a foundational course, such as Population Health, the student gains *knowledge* related to the health needs that are more prevalent in different populations and age groups.

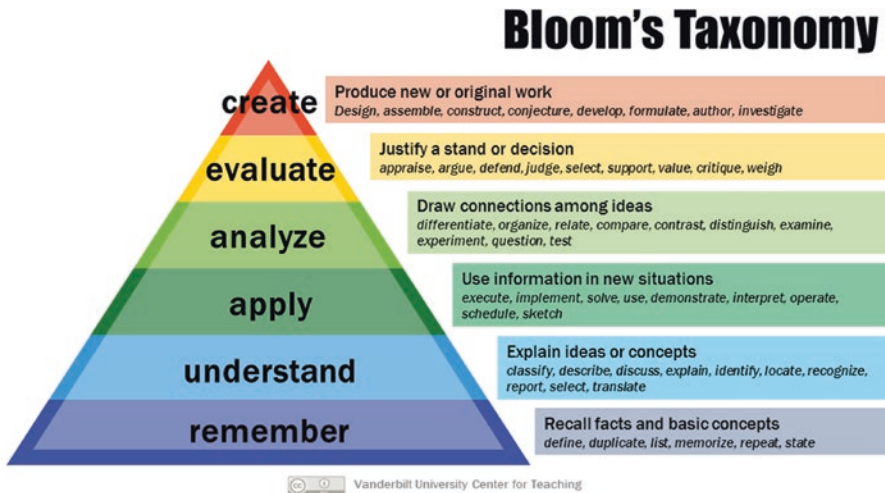


Fig. 2 Bloom’s taxonomy. Armstrong P. Bloom’s Taxonomy. Vanderbilt University Center for Teaching; 2010. <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>. Accessed 31 Oct 2022

2. In advance science courses, the student gains the *knowledge* of advance physiology and pathophysiology.
3. In advanced health assessment, the student *learns* the technique to gather pertinent information and *performs* the pertinent physical exam.
4. In first-level clinical courses, the student *applies* what is learned.
5. In a diagnostic reason course, the student *interprets and analyzes* the information to form a diagnosis.
6. In advanced-level clinical, the student *formulates* a plan and *evaluates* it.

It is the achievement of course objectives and outcomes as well as measurable competencies that determine a student's level of competency.

Another framework used in evaluating NP clinical competency across the curriculum is the PRIME or PRIME-NP (Professional Behaviors Reporter, Interpreter, Manager, Educator/Evaluator) framework [11, 12]. The PRIME-NP framework uses the Objective Structured Clinical Examination (OSCE) method of assessment for students' clinical competence [11]. Standard rubrics that evaluate student clinical competence at their expected level (e.g., reporter, interpreter, manager, or educator/evaluator) aid in determining student proficiency [11]. Examples of indicators of clinical competence for professionalism include punctuality, teamwork, and respectfulness. Reporters must develop strong interviewing skills and gather and clearly communicate patient information from the history, physical exam, and any diagnostic testing [11]. Interpreters must be able to create differential diagnoses that are complete and comprehensive, as well as describe the rationale for the working diagnoses [11]. Managers must be able to manage patients and the healthcare team; examples of indicators for meeting this domain include providing patient-centered care, including incorporating the patient or family values into the plan of care, addressing social determinants of health, and providing team-based care [11]. Finally, educators/evaluators must provide self-reflection for the next steps to their preceptor or faculty [11].

A third framework for evaluating the achievement of clinical competencies is the Mastery Rubric for the NP (MR-NP) [13]. The MR-NP was developed based on the Mastery Rubric, which is a curriculum development and evaluation tool. MRs require three elements, including a list of knowledge, skills, and abilities (KSAs), a developmental trajectory, and performance-level descriptions (PDLs). MR-developed curriculums generate actionable evidence that should be used to make curricular decisions [13]. The MR-NP was designed to align national competencies for NPs with curriculum standards. There were several key areas of KSAs developed so that "an NP curriculum can go beyond simply aligning with or including, the competencies" [13]. The MR-NP framework can be utilized to promote both learning and competency assessment for students and faculty [13].

Competency-Based Education

A chapter on competency would not be complete without mentioning *competency-based education* (CBE). An early definition defined CBE as "a data-based, adaptive, performance-oriented set of integrated processes that facilitate, measure, record and

certify within the context of flexible time parameters that demonstrate known, explicitly stated and agreed on learning outcomes that reflect successful functions in life roles” [14]. Health professionals’ education has recommended CBE for years.

AACN defines competency-based education as “a system of instruction, assessment, feedback, self-reflection, and academic reporting that is based on students demonstrating that they have learned the knowledge, attitudes, motivations, self-perceptions, and skills expected of them as they progress through their education” [2]. Other organizations define the term differently, including the US Department of Education, which more narrowly defines it as education “that organizes academic content according to competencies—what a student knows and can do—rather than following a more traditional scheme, such as by course” [15].

The common thread to the above definitions is obtaining mastery of the content, based on defined learning outcomes. Competencies are determined based on the skills and knowledge necessary to function safely in the workplace. They are assessed using competency-based assessment tools that measure a student’s ability to apply theory to practice.

The 2017 *Macy Report, Achieving Competency-Based, Time-Variable Health Professions Education*, indicates four factors to achieve a successful CBE program:

1. An agreed-upon set of observable and measurable competencies.
2. A program of study goes beyond curriculum expectations to define program outcomes.
3. An environment for time-variable education and active learning.
4. A development program for faculty [16].

The experts who contributed to the *Macy Report* had the following vision:

With the achievement of competency-based, time-variable health professions education, we envision a health care system in which all learners and practitioners are actively engaged in their education and continuing professional development to improve the health of the public. In this system, learners and faculty partner to co-produce learning, all practitioners are life-long learners, and all health care environments place a high value on learning [16].

The evaluation of students using competency-based assessment (CBA) tools that measure a student’s ability to apply theory to practice is vital to the development of CBE. As NP education moves toward CBE, the development of assessment tools is critical. However, the development and validation of CBA has just begun; it will take time for CBE and CBA to become the norm.

Conclusion

This chapter described several countries’ processes to create NP competencies. A list of competencies is provided based on elements commonly referenced in international competencies documents, as well as the domain of the Strong Model. Understanding the ways in which competencies fit into an academic structure and their relationship to institutional and program missions, visions, and outcomes will

help countries build a framework as they embark on creating their own practice competencies. A brief description of CBE and CBA concludes the chapter.

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The Nurse Practitioner as a Leader

Joyce Pulcini, Nancy Street, and Steven Purcell

What Is Leadership?

Definitions of leadership vary by discipline, ranging from business frameworks to a more nuanced term used by academics, local department heads, and nonprofit organizations. Strategic, passionate, deliberate, focused, goal oriented, and inspirational are some of the terms used in defining leadership and those who assume this role. Terms such as transformational and transactional invoke thinking linked to leadership style [1–3]. Transactional leaders supervise, organize, and oversee performance of a team, or group of followers. Rewards motivate effort and achievements. This style of leadership is noted to be effective during an emergency or crisis and with focused projects [4, 5]. Transformational leadership inspires employees or followers, centered on their shared vision for their work [5, 6]. Newer leadership models, notably those in healthcare, incorporate the concept of well-being [7]. Leaders are valued as followers look to them for guidance and direction. It is said that the best leaders lead by example [8, 9].

Nursing leaders are responsive to individual clinicians, nursing cohorts, interprofessional teams, and importantly patients and families. They commit to inspiring innovation in the healthcare setting to ensure quality patient care delivery [10]. Leaders are responsible to patients and their families, who remain central to nursing

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practice. Empowering team members to realize their potential as patient experts, full of purpose, is core to nursing leadership.

Worldwide, advanced practice nurses (APNs) work in a variety of settings, partnering with fellow nurse colleagues, physicians, and medical offices in the delivery of primary and specialty healthcare. Recognizing regional variation in their scope of practice, we maintain that APNs are seen as transformational leaders in healthcare, serving as clinical resources, mentors, and role models for colleagues.

Calls for increasing nursing leaders and leadership competencies in the professional workforce resonate across the globe. Toward this end, it is widely recognized that leadership skills are not necessarily innate and can be developed through education and ongoing refinement [11–13]. This knowledge promotes the notion that most people are capable of leading with sufficient training [6, 14] and sets the stage for continued leadership development and education.

The Nurse Practitioner as Leader

Leadership can be seen in many spheres of nursing practice. The spheres include clinical leadership, organization leadership, educational leadership, and professional leadership.

Nurse practitioners (NPs) are by definition clinical leaders. Leadership is associated with power. Their power is derived from expert knowledge and clinical outcomes and from their position as a clinicians who interact regularly with patients throughout the lifespan. As highly educated healthcare providers, they are natural leaders, but that leadership must be shaped and developed as the NP begins to see beyond their own practice to the larger community, the nation, and the world. Leadership should grow as practice shapes the NP's perspective and understanding of the need to advocate for social change within the larger community [15].

Patient advocacy is an essential component of leadership as professionals have a social obligation to examine broader issues and advocate for improved health and social conditions. Advocacy also includes helping patients learn to navigate their world as they acquire chronic health conditions and the resulting financial effects of changing family dynamics, advancing chronic disease, and the social consequences of illness. Leadership in advocacy also involves lobbying for broader social change as well as for professional advancement for nurses and nurse practitioners.

Beyond the clinical realm, nurse practitioners also may be leaders in professional or clinical organizations. This type of leadership is essential for the advancement of the profession and for improvement of healthcare. Some nurse practitioners may wish to remain in practice at the clinical level, and others are drawn to administrative positions within their organization and have much to offer as leaders. Leadership in professional organizations is also essential for advancement of the profession. As older NPs retire or move on, young leaders are needed to continue and foster the expansion of the role at all levels. In a similar vein, young NPs are needed to begin to teach the next generation of nurse practitioners as faculty in educational programs. The USA has experienced a shortage of nurse educators as have many other

countries in the world [16]. Motivating nurses to take on these higher-level roles in healthcare organizations or educational institutions must take a priority as we move forward.

Vision of NP Leadership

What does it take for a NP to evolve into a leadership role? Today, advanced practice nurses come to the workplace with advanced education and clinical expertise and are often elevated to the rank of nurse leader. This rise to influence and power among nurses is more often assumed, not chosen, as academic standing and experience translate to increased competencies and authority.

Many factors come into play here but first and foremost is the NP's view of themselves as a potential leader. We always speak of the four C's when speaking about leadership: Confidence: Confidence comes with time especially for new NPs, and the work environment can foster or hinder this important prerequisite for leadership.

Competence: Leaders often start with informal leadership opportunities such as chairing committees or leading initiatives at the local level in their position. Strong clinical competence also builds over time to the point that the NP feels that they can take on more and more responsibility for patients. This competence is important for those who will follow and accept this person as a formal leader.

Credibility: Integrity and credibility go hand in hand. A leader must be seen as being credible in order to take on more responsibility. Leaders must have the respect of their peers if they are to be successful.

Credentials: A leader should of course have the appropriate credentials for practice, but they may choose to take on further credentials specific to leadership to enhance their positions. These credentials may take the form of academic preparation, certifications, fellowships, or awards, which verify that objective bodies also value the nurse's abilities.

Mentorship is noted to be a critical component for leadership development and practice in many regions of the world. A mentor creates an environment in which the NP is ready and willing to take the next step and helps the person to evolve as a leader. The mentor assures the NP that they are ready for the leadership role, providing invaluable support, as many nurses are hesitant or not envisioning their own leadership potential. Securing a robust network of leadership mentors has proven challenging across many regions and often leaves many early nurse leaders at a loss. It is critical that other nurses and allied health professional colleagues fill this gap by providing guidance and mentorship.

A Global Lens

Global shortages in healthcare professionals currently exist and are projected to remain for decades to come, further driving pervasive health inequity seen throughout the global community. The largest gaps are seen in low- and middle-income

countries [17, 18]. In helping to address this shortfall, APNs functioning in advanced clinical, administrative, and educational leadership roles, typically in primary care and resource-poor settings, are working to fill gaps in care and improve access. Despite the increasing number of APNs and favorable public and professional perception of their role in international settings, countries have unique challenges in implementing, regulating, and monitoring APNs. Optimizing the scope of practice and expanding the nurse workforce in order to aid the global call for universal health coverage (UHC) and meet the 2030 Sustainable Development Goals (SDGs) are challenges to be met by new and existing APN leaders [19, 20].

Analysis of the impact of the nursing profession, including that of APNs, is difficult to obtain. International recognition of the value of the APN is often encumbered not only by a lack of contextually relevant and robust research on patient outcomes but also by failure to recognize the value added of integrating the profession into areas with shortages of health professionals. Empirical data is needed, especially as APN roles exist in approximately 70 countries today [21, 22].

International consensus on progressive policy action for addressing health workforce issues, access to care, and integration of APRNs is in its early stages. Organizations such as the ICN NP/APN Network [23], represented by nurse leaders from around the world, are working to define the role and inform a policy agenda with advocacy and research, evidence-based implementation strategies for the APN role. The evolution of policy frameworks beyond theory is critical to legitimizing APN role development. The Brown framework [24], which helped conceptualize role legitimacy and the scope and competencies of advanced practice nursing, is tied practice to outcomes in diverse environments. It also laid the groundwork for APN policy action. Bryant-Lukosius and DiCenso [25] introduced the PEPPA framework or participatory, evidence-based, patient-focused process for advanced practice nursing role development, implementation, and evaluation, which is still being applied to APN roles across diverse global settings. In order to succeed in promoting a change or the evolution of context-specific APN/NP roles, a leader uses evidence and sound methodology to engage stakeholders and inspire colleagues. The strength in the application of the global lens of APN/NP leadership must be increasingly qualified by and contingent upon empiricism.

Global nurse leaders are individuals who are able to affect change by molding policy frameworks to be socially and culturally relevant so as to mobilize key stakeholders to build upon, promote, and execute new APN role development as progressive action toward UHC and meeting the SDGs. Rosa et al. [26] define several “everyday actions” nurse leaders can take to meet these goals, including but not limited to advocacy for the full scope of nursing practice authority without barriers; advancement of gender equality; expansion of nursing roles to provide greater emphasis on public health, disease prevention, and the promotion of wellness; partnering with communities to leverage nurses’ voices; and seeking leadership positions to drive health-related decisions.

The need to leverage APNs as nurse leaders was further highlighted by the sudden onset and omnipresence of the COVID-19 pandemic. The International Year of the Nurse and the Midwife in 2020 demonstrated both proof of the determination

and capability of the nurse and the tragedy of high frontline health worker morbidity, mortality, and burnout as the pandemic quickly overwhelmed health system capacity around the world. APNs were and continue to be heavily utilized during the COVID-19 pandemic. In the USA, where scope of practice and autonomy vary by location, state-level governments selectively suspended requirements to hold collaborative agreements with physicians to grant APNs and NPs full practice authority. APNs “stepped up” to the task and fulfilled vital roles in a time of perilous nurse and physician shortages. This crisis highlighted APN competency to perform at the highest level of their training where prior to COVID-19, many APN roles in the USA were constrained by political and policy barriers [27, 28].

Conclusion

The Future of Nursing 2020–2030 report [29] calls on all nurses across all work settings to serve as leaders. This seminal global report provides a framework for future nursing leadership. This decade marks a milestone for nursing with recognition from international organizations such as the World Health Organization and the Robert Wood Johnson Foundation, along with increasing attention from media outlets and government agencies throughout the COVID-19 pandemic.

Amidst this call for leadership, we recognize that many nurses from across the globe are assumed to be leaders due to their education and clinical expertise, rather than hired or appointed for such roles. This differs from most disciplines, including our physician colleagues and hospital administrators who seek leadership positions, with formal academic training and mentorship.

As we move onward, embracing the call from the *Future of Nursing* report (2021), we recognize the current examples of exceptional leadership by advanced practice nurses globally. Their stories of the road less traveled inspire future generations of nurse leaders. Cultural and social structures surround nurses in their community and workplace. These broader influences have a profound impact on the scope of professional practice, advancement within systems, and a leader’s capacity for authority. Academic training and mentorship for emerging nursing leaders is critical to developing the future workforce. Advanced education in nursing should include core courses in management and finance. Programs should be financially supported by healthcare organizations that employ nurses, higher education institutions, and governments, in order to secure a robust workforce of nursing leaders.

Advanced practice nurses and nurse practitioners have taken leadership roles across the healthcare spectrum. Combining their patient care expertise with their knowledge of nursing science sets them apart in healthcare leadership, policy, development, and innovative care delivery. Today, we watch Cori Bush and Lauren Underwood take the lead in the US Congress, using their nursing backgrounds to inform legislation that motivates community health and well-being, including housing, transportation, and climate platforms. Nonprofit sectors are benefiting from the leadership of distinguished nurses. Nurses are leading academic institutions around the world, including public and private universities.

Advocacy for continued focus on educating the future workforce, advancement of the role, and embodying advanced practice nurses' full scope of practice is our way forward. While leadership has many definitions and roles, the need to fill gaps in human resources for health and practice in diverse global settings is necessary to strive to achieve UHC and meet the 2030 SDGs [19]. Coalitions around the world have formed and are evolving to define and implement APN/NP roles. In sub-Saharan Africa, for example, the Anglophone Africa Advanced Practice Nurse Coalition collaborates with local stakeholders to promote and implement the role in English-speaking Africa [30]. African APN leaders, in collaboration with colleagues from nations with comparatively well-established APN roles, such as the USA and UK, are positively disrupting traditional health systems in resource-challenged environments. The outlook for the APN/NP leader is bright but more work needs to be done. An APN/NP leader in global health is an individual who aligns a high level of training and education to the needs of their community through culturally and socially sensitive action and advocacy for UHC and SDGs in the fight for health as a human right.

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The NP and Research: A Global Perspective

Patricia F. Flannery Pearce

Purpose

The purpose of this chapter is to present an overview of the many contributions of nurse practitioners internationally to research. The knowledge and skills of NPs are sought increasingly on the global stage. Although the NP roles and responsibilities are continuing to develop fully in some countries, contribution to research is an important area that reflects involvement of NPs in practice, education, advocacy and policy, leadership, and science. Exemplars in each of these areas and across multiple countries will be introduced and highlighted in this chapter, to provide understanding of the substantial research contributions.

Background

The value and contributions of nurse practitioners (NPs) to healthcare and the general well-being of patients are substantial and well-documented. The role of the NP was developed initially in the United States over 50 years ago, with the work of Drs. Silver and Ford [1–3]. Initial work of the NP was in pediatric care, but the role was quickly integrated into other populations and migrated into a wide range of settings in the United States (USA), as early as the 1970s in Canada, and 1980s in the United Kingdom (UK) countries and Africa. As the role has spread throughout the world, each country or location has developed its unique foundation for the role and dealt with obstacles as well as supports in defining, operationalizing, and evaluating the

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role and related outcomes [4]. Along with changes in advanced education, *scholarly projects*, *evidence-based practice projects*, and *quality assurance initiatives* have increased substantially, but are beyond the scope of this review.

Emphasizing the importance of research to the role of the NP, the term *research* is represented 51 times in the International Council of Nurses guidelines for NP and Certified Nurse Midwife (CNM) [4] and in the information in the varying countries represented in the guidelines (Africa Coalition, Canada, Republic of Ireland, Japan, Netherlands, UK, and USA). Published research parallels the level of development within the country of origin, typically beginning with the parameters of the NP role and practice responsibilities, including scope, prescribing, setting, educational parameters, effectiveness, and patient preferences and responses. Statutory and policy regulations for locations are integrated in each country, influence practice strongly, reflect the unique culture in which the roles are set, and demonstrate the rising centrality of the role within the healthcare systems across the globe. The purpose of this chapter is to present a synthesis of research contributions of NPs globally. Exemplars of published research related to NPs across multiple countries will be presented in detail.

Process

A systematic electronic search approach to published literature was undertaken for this chapter. Electronic searches were completed in PubMed (Library of Medicine) and the Comprehensive Index of Nursing and Allied Health Literature (CINAHL), the Cochrane library, and the Johanna Briggs Library of Systematic Reviews, as the primary sources for locating indexed scientific literature. Search terms included *nurse practitioner*, *advanced practice*, *research*, and *international*. Publications from any year were included. Citations were retrieved and downloaded into EndNote® (v.20, Clarivate) and duplicates were removed. A total of 483 references remained, with publication dates spanning 1981 through 2022. Then records were discarded or retained based on initial assessment of title and abstract information, including only those publications representing nurse practitioners, research endeavors of any type, and any country of origin. If inclusion/exclusion could not be determined by title and abstract, a full copy of the article was reviewed. Full text articles were reviewed for all articles included in this chapter. The International Council of Nursing (ICN) guidelines [4] were added to the literature database for context. Additional publications were identified and added to the library during review of full text articles. Retained articles were labeled for country association within the EndNote® (v.20, Clarivate) library, based on author country or focus of the research.

Reports fitting qualitative, quantitative, and mixed paradigms were included. Reports utilizing any research design were included. Reports constituting systematic reviews, scoping reviews, and literature reviews were included. However, research *proposals* (e.g., research study *proposals*, scoping review *protocols*, systematic review *protocols*, interventional research *proposals*) were excluded. Additionally, *evidence-based practice* and *quality assurance projects* were excluded

unless clear research design and methods were provided. Items discarded included those articles reflecting varying use of the term *international*, such as *international units* (e.g., of medication or lab testing) that were not specific to NP-related research. Reports were excluded if there was lack of clarity regarding sample or basis of the research. For example, an article was excluded because there was no way to determine country distribution/setting of the sample derived from Facebook members, with authors from the USA.

The research design in the preponderance of the reports was descriptive, whether quantitative or qualitative. A total of 70 published articles were deemed relevant for inclusion for the topic. These reports represented research completed in 23 different countries (see Table 1) by 300 unique authors. Authorship for the combined articles reflected a range of 1–22 authors, with average per published article of 4.4 (median = 3; mode = 3) for the total of 300 unique authors. The preponderance of author lineups represented a single country (range 1–7 countries). A particular challenge in identifying country of origin is related to the complexity of multiple collaborators across the globe. Determination of country affiliation and focus is challenging. One example is provided by Spies and colleagues [5] representing a case study emphasizing cross-country monitoring for APRNs in Hungary, with authors affiliated in seven countries: USA, Canada, Hungary, New Zealand, Ireland, Finland, and Uganda. An example of single-country author and focus is Bonnel [6], a French investigator, focusing strictly on France. Sastre-Fullana and colleagues [7] represent investigators from 7 countries, focusing on data from 19 different countries.

Search Term Precision. One of the search challenges met was assuring definitional clarity for the term *international* in electronic indices searched. Using *international* as key search term provided broad scope for nursing and other areas, but there is no clear definition regarding what type of work qualifies as *international*. For the purpose of this chapter, international was used as a linchpin for observations from any country in the world, or about any other country in the world. Author representation represents authors across the globe, and research reported represents study activities in a total of 23 different countries. Given the scope of the book and this chapter, publications included in searches with keyword *international* were included, regardless of country of origin or whether the articles retrieved represented single-country or multicountry effort in design or in author representation. Including all published research is beyond the scope of the chapter, but a substantial sampling of available articles is included in this review.

Table 1 Countries represented in published research included in this review

Australia	France	Netherlands	Switzerland
Canada	Haiti	New Zealand	Taiwan
Chile	Hungary	Scotland	Tanzania, Republic of
Denmark	Ireland, Republic of	Slovakia	Uganda
England	Israel	South Africa	United States
Finland	Japan	Sweden	

Similarly, the search term *Nurse Practitioner* is a unique identifier term in MeSH headings, but links specifically to *Nurse Practitioner*, *Pediatric Nurse Practitioner*, and *Family Nurse Practitioner* (MeSH listing), not specifically linked to any other types of nurse practitioners. A challenge in searching for and then assessing reports was in assuring that for inclusion in this review, the research reported was focused on nurse practitioners and some facet of their work, outcomes from their practice, or NP-related policy. Because there are multiple labels across countries for the role of the nurse practitioner, the differentiation is challenging. Reports were excluded because of the lack of identifiable NP credentials, inability to clearly identify NP participants or outcomes from those of other practitioners, or focus on other than NP work. Articles with less precise terms, such as *district nurse*, were included only if the article reflected a clear corollary with nurse practitioner, such as in Blanck and Engström [8]. Additional exclusions were due to the less precise term use, which precluded determining whether or not NPs were included. Less precise terms included *health care provider*, *health practitioner*, *general nurses*, and *general practitioner*. For examples of exclusions based on precision of role labeling, see Kline and colleagues [9] in Australia or de Wet and colleagues [10] from Scotland. Publications were excluded if the focus was clearly on *registered nurses* or *general nurses* only or referenced as *practice nurses* [11].

Author country affiliation was tabulated in this review for understanding of the breadth of NP work internationally. However, author country affiliation is only one facet of international representation and does not necessarily represent the country of research participants; thus it is a limitation in process. For example, authors Würtz, Jensen, and Ergerod [12] are all based in Denmark, but the research these authors reported involved intentional selection of NP participants from Sweden, Norway, England, and the USA.

Included in the *Guidelines on Advanced Nursing Practice* [4] are definitions differentiating *Advanced Nursing Practice*, *Advanced Practice Registered Nurse*, and *Nurse Practitioner*. *Advanced Practice* and *Nurse Practitioner* were used as keywords in searches for this chapter, but the terms are not as clear in the related literature as they are used in the ICN guidelines. It is important to note that over 300 articles retrieved from the searches were excluded based on irrelevance in terms of nurse practitioners although captured in searches with terms specific sufficiently to exclude.

Findings

Published Research Patterns Across the World. There is a developmental pattern reflected in published research reports that sequences through topics and complexity—as the NP role initiates, is implemented, and expands in varying countries. The research reflects a similar sequence that evolves into an iterative pattern, cycling back continually. In locations developing the NP role initially, published research highlights clarification in context of culture, conceptualization, and operationalization of the NP role, including parameters for education and experience within the

country. In these areas, research was reported on developing the role utilizing surveys and focus groups or interviews completed by nurses and nurse managers regarding perceptions of the roles (e.g., Sweden; see [13]). As the NP role progresses, investigators circle back to the issues and questions, updating, expanding, and reporting on further developments—thus continuing the discussion.

Additionally, as the NP role becomes more developed and institutionalized in the locations, patterns in reported research continue to expand and clarify roles and parameters, but enlarge to include effectiveness in the NP role, educational recommendations and requirements, intricacies of practice scope, as well as the role within the healthcare system. Acceptability to others, including patients, is reported crossing countries with new development of the NP role through the more experienced countries. Patient satisfaction with NP care management is included in research reports at this developmental level. For countries with the most developed NP role, research emphasizes reports on health outcomes and cost-effectiveness. Initial research reflects emphasis on single-country, sequencing with more role experience, into multiple-country research.

Nurse Practitioner Roles, Parameters, and Characteristics. Research related to NP role and parameters abound in the published literature, spanning a wide range of years as well as geographic locations. Examples reported in the 1990s include Becker and colleagues [14] reporting on NP-managed anticoagulant clinics in the USA. Nzimakwe and colleagues [15] reported on NP primary care in South Africa, identifying advantages and disadvantages in the role, as the NP role is evolving in South Africa. In Japan, Eklund [16] discussed the role of the neonatal NP, delineating the more limited scope of the NNP and movement toward expanding the role. Suzuki and colleagues [17] later reported there were about 600 registered NPs in Japan and completed descriptive survey with responses from 100 of those NPs. Although there were inroads reported in Suzuki et al. [17], at least 11% of the respondents indicated working at RN level.

As NP roles migrated and acceptance increased, comparisons with other healthcare providers also expanded. Mills and colleagues [18] completed a secondary analysis utilizing the 1992 National Hospital Ambulatory Medical Care Survey, exploring patient visits with nurse practitioners (NPs) and physician assistants (PAs) ($N = 2847$) and demonstrating that NPs provided substantially more health promotion services in women's and children's services than other providers. Mills and colleagues also demonstrated that in rural areas, more patients were seen by physician assistants than NPs, while NPs spent more time in counseling and education with patients.

The roles, parameters, and characteristics of NPs and their practices continued to be explored in the 2000s through a range of research initiatives in a variety of countries. Munding and team [19] demonstrated in a USA-based study that there were no significant differences between NPs and MDs, in care or satisfaction ratings, or care outcomes with 6-month follow-up. In addition, there were comparisons with NPs and CNSs. In 2003, Ball and colleagues [20] explored NP and CNS roles in critical care in the UK, the USA, Australia, New Zealand, and Canada with a sample of 39 NPs and CNSs. Ball et al. found that NPs reported a greater emphasis on direct

care, while in-patient care, quality of care, and successful outcomes were paramount in both roles. DiCenso and team [21] detailed key barriers and facilitators in CNS and NP roles, working toward recommendations for practice in the Canadian system. Bonnell [6] completed a review of literature on the developing role of the NP in France. Bonnell details a lengthy list of published research representing France and other countries. MacLellan and Levett-Jones [22] utilized an ethnographic approach to explore the growing acceptance of the NP role and detailed several stories from NPs as they navigate challenges. Aaron and colleagues [23] reviewed patterns of role migration and integration, identifying possibilities for NPs in Israel to provide safe, high-quality care. In a qualitative study, Cooper et al. [24] explored next steps focused on internationally qualified health practitioners, including APRNs, in Australia to accommodate for extensive migration of individuals practicing in healthcare. Espinoza et al. [25] explored possibilities of advancing to master's level education in Chile, focused on preparing APRNs for practice. Scope of practice in Taiwan was the focus of several reports [26–29], and the impact of practice outcomes on NPs in Taiwan was also assessed [30]. Chen and colleagues [31] explored burnout in NPs in Taiwan, demonstrating burnout related to workplace stress, transition challenges, and other factors, with findings similar to other researchers, while Wei had documented positive role perception and satisfaction in NP role [32]. In Australia, Poot and colleagues [33] documented that NPs had lower prescribing rates for potentially inappropriate medicines (PIMs) in the elderly, than other prescribers, including 129 NPs ordering over 12,000 prescriptions.

Nurse practitioner roles in Australia and New Zealand continue to be explored and validated. Chang and colleagues [34] used a Delphi technique to validate an instrument for measuring roles and performance parameters for NPs. Carryer et al. [35] discussed role expectations and related policy and educational patterns in New Zealand and Australia. Scanlon [36] provided detailed information regarding regulatory requirements for NPs in Australia, focusing on the role parameters and NP scope of practice. Parker and colleagues [37, 38] explored patient preferences and satisfaction, identifying the challenges in understanding the NP role continued, but that most patients were satisfied with their care. MacLellan [22] completed an ethnographic study of experience of NPs and transition to practice. These reports all detail the trials and tribulations of the NP role in Australia, while highlighting some of the positive outcomes reached with the hard work of NPs. Later Carryer and team [39] completed research with 3255 RNs and NPs to better understand role parameters and scope. Domain-specific responsibilities were identified and presented, providing a substantial foundation for education of and policy related to the NP role in Australia and New Zealand.

In Slovakia, Halász and colleagues [40] surveyed 584 NPs, demonstrating a young ($M = 41$ years; range 24–60 years), predominantly female (95%) sample, with advanced degrees (97%) and with practice settings predominantly in institutional care (82%), split between governmental and private positions. Numerous questions about practice, guidelines, education, and leadership were posed in the research. The iterative nature of understanding role parameters is a pattern in several countries.

Expanding beyond NP role parameters, research explored scope of practice, practice patterns, networks, and organizational climate in several studies conducted in different countries. Examples include a practice-based network emphasis was completed by Deshefy-Longhi and colleagues [41] in the USA. A sub-study comparison of NP networks and physician-run networks was completed using a survey designed by the Agency for Healthcare Research and Quality (AHRQ). Findings indicated positive practice patterns for NPs. Researchers recommended additional study with NPs and their patient encounters to further substantiate the positive outcome of NPs and their patients. Luo and colleagues [42] explored organizational empowerment in acute care NPs in Taiwan, finding that empowerment was low and satisfaction at only a moderate level. Higher job satisfaction was related to higher empowerment in the cross-sectional, national sample ($N = 946$) [42]. An interdisciplinary health model in primary care integrating a USA-based team with partners in Haiti was detailed in a report focused on the importance of partnerships in care delivery [43].

There is increasing emphasis on research with practice, research, and service partners reflected in the published literature. Ryder and colleagues [44], representing an investigator team from Australia and Ireland, demonstrated positive outlooks of NPs ($N = 10$) who were interviewed. NPs identified needs for innovative leadership and academic partners for research; participants felt high optimism and resilience were critical, and all of these areas required collaborative relationships and partner building for success. In Sweden, Blanck and Engström [8] reported on prescriptive practices, as well as the relationship of practices to informal and formal structural power. Findings in Blanck and Engström [8] demonstrated in sample of 150 a lower frequency of prescribing and equivocal commentary regarding structural power.

A more comprehensive view of roles and parameters was employed by Sastre-Fullana and colleagues [7] in an attempt to sort out confusion and to clarify NP roles from across the world utilizing secondary analysis and mapping techniques, with visual analysis and semantic networking. In the study, Sastre-Fullana et al. mined information from 19 countries located in Africa, Australia, Asia, Europe, and North America. The original data was from an ICN report on NP roles in 19 countries. The Sastre-Fullana report provides substantial detail regarding role parameters for direct and indirect care, education, support, professional leadership, and publications, sharing the mapping in graphics that are complex and comprehensive, but serve as highly usable graphical displays for understanding the breadth of NPs globally.

In addition to a more comprehensive understanding of the NP role on a global basis, research continues in highly targeted areas, such as education. Chao and colleagues [45] completed a survey (USA) of NP program faculty ($N = 49$) ascertaining that most NP faculty believed nutrition content was important for NPs and that most programs included nutrition content. Würtz, Jensen, and Egerod [12] reported results of a qualitative, descriptive study focused on comparing the pediatric NP education and role in four countries, highlighting the differences and similarities, as well as the criticality of NP-based care in pediatrics and family focus. Targeted information such as educational content is helpful in understanding existing

parameters in NP education, helping to provide guidance. Education of NPs was also the focus in Mboineki and colleagues [46] for initiating formal programs of education for NPs in the Tanzanian system. Although Würtz and colleagues and Mboineki and colleagues [46] utilized small samples in their qualitative designs, small samples are expected in qualitative design, to obtain a rich understanding of the phenomenon of interest.

Exploring NP practice in wound care indicated challenges in tertiary settings, with a need for clinical protocols and scope of practice development [47]. MacLellan and colleagues [48] explored transition to practice with new NPs, using content analysis for repeated sequential qualitative interviews over first year of practice. The overall outcome indicates success in the NP role, with emphasis on turmoil and tenacity in the process.

Expanding NP Roles. The expanding role of the NP is highly visible in the published literature. Allen and Fabri [49] evaluated the roles of the NP working in a community-based care of the aging in Australia, demonstrating successful extended practice setting. Similarly, Asimus and colleagues [50] demonstrated a successful pressure ulcer prevention program across 41 Australian facilities, with a pressure ulcer prevalence reduced to 16% and use of appropriate devices increased by 45%, with substantial cost savings. In a Canadian patient cohort ($N = 113$), patient satisfaction with care from NPs in emergency department visits was assessed, demonstrating positive outcomes in attentiveness, comprehensiveness of care, and role clarity [51].

In the USA, Cole and Kleinpell [52] completed a thoughtful commentary on the acute care NP role and the tremendous potential foreseen. Considine and colleagues [53] subsequently reported a prospective, exploratory, descriptive study in Australia (Victoria), reviewing 476 patients managed by emergency department nurse practitioners. Considine et al. demonstrated the effectiveness of the NP in the emergency department and documented time in focus as well as patient requirements during ED stay. Expanding and changing roles were represented in a report from New South Wales in 2013. Li and colleagues [54] completed grounded theory-based research completed in two large metropolitan hospitals in New South Wales. Nurse practitioners reported a distinguishable change in clinical decision-making, with heightened responsibility, but also reported frustration with a standard of comparison with physician-based care. In the Netherlands, Boeijen, Peters, and van Vught [55] completed an exploratory, qualitative descriptive study with ten NPs, emphasizing the value added that NPs contribute to healthcare. The NPs were from 12 different specialty areas in outpatient care, with experience between 3 and 13 years. The NPs highlighted the importance of care and cure focus, competency, and holism.

Focusing on NPs working in orthopedics specialty, Coventry and colleagues [56] completed a retrospective cohort study utilizing records ($N = 301$) of older aged (≥ 65 years) patients with hip fracture in West Australia to evaluate length of stay (LOS) and simple cost, modeling on patients before and after the NP role was instituted. Coventry et al. [56] demonstrated cost savings, as well as a statistically significant decrease in LOS.

Emphasizing roles and NP education and parameters across countries, Currie and colleagues [57] reported on a comparison of the NP in emergency department in the UK, Australia, and New Zealand. Currie [57] found reports of private practice models in five countries, with reports emphasizing elements of models of care and responsibility practice reimbursement, collaborative parameters, and related legislative issues. Subsequently, Currie [58] completed a review of the published literature regarding private practice models.

Coleman [59] completed a cross-sectional study across metropolitan, regional, and remote rural clinics in Australia, assessing patients with chronic kidney disease satisfaction with NP-managed care. Coleman demonstrated positive feedback from patients regarding their care.

A recent contribution to the understanding of NP practice was a descriptive study by Adams and colleagues [60] focused on organizational climate for practice in New Zealand, with 136 primary care/NPs responding. Adams and colleagues [60] found that NPs could practice independently and autonomously with support and were supported by administration, but note less resource support than physician colleagues were given. This information is well-positioned for use in policy and advocacy for NPs in New Zealand.

As the NP role is explored, a comparison to physicians is frequently made. In the Netherlands, Dierick-van Daele and colleagues [61] completed a prospective trial of 1500 patients in 15 practices, reviewing records to assess quality of care. Results indicated NP consultations were longer in time, had more follow-up consultations, and had more extended revisit invitations, but care was comparable in this Netherlands cohort. Gysin and colleagues [62] used a qualitative, descriptive design to include NPs and GPs in Switzerland to ascertain perceptions of NP added value in practice, understanding the NP role, and the political and legal obstacles in introducing the role. Pioneering GPs and APNs acknowledged the value added and obstacles to NP practice.

In a specific practice area of screening colonoscopy, NPs and physicians were compared in a prospective randomized clinical trial with 50 NPs and 100 MDs [63]. In this study, there were no complications in either group (patients randomized to NP or MD), with slightly higher satisfaction with NPs and slightly higher adenoma detection rate by MDs. Sharp [64] completed a retrospective chart review in adolescent health, documenting fatty liver among a group of adolescents at the Mexico-USA border.

Steinke and colleagues [65] provide literature-based information on successful collaboration in clinical partner relationships that are essential for successful cross-country research, utilizing four partners for the discussion. Subsequently Steinke and colleagues [66] published on the positive experiences of NP students in global experiences as part of their educational experiences. Successful collaboration is represented in Steinke et al. work [65, 66] as critical for developing a global experience to facilitate understanding of healthcare systems external to the NP's home base.

Comprehensive Reviews. With migration of the NP role globally, changing roles and responsibilities, and emphasis of the NP on high-quality, cost-effective

care, there is a flourishing interest in compiling comprehensive views on a number of topics related to NPs and their practices. The growing body of comprehensive reviews focused on nurse practitioner roles and substantial contributions to health-care overall. Systematic reviews and scoping reviews typically included publications from a wide span of countries, unless there was a specific scientific rationale for specifically limiting the countries represented. In electronic searches for this chapter, there were 241 systematic reviews and 24 scoping reviews, including 33 systematic reviews and 7 scoping reviews from the Johanna Briggs Institute Library and 1 item from the Cochrane Library found in the primary searches. The single item located in Cochrane mentioned NPs in two of the included studies, but did not explicate sufficiently to retain for this chapter. Three of the items from JBI were retained [67–69]. These were generated from Australia, Canada, and the USA, but provided expansive searches in focus on the expanding roles of NPs in countries with well-advanced NP roles. The specific areas demonstrated evidence of successful professional endeavors for NPs working in three specific settings: adults with intellectual and developmental disabilities and team-based primary care [67], NP effectiveness in nursing homes [68], and the experiences and effectiveness of NPs in orthopedic settings. Donald and colleagues [70] focused internationally and emphasized cost-effectiveness of NP care, notably focusing on the methodological strengths and weaknesses of 43 clinical trials and including a wide variety of variables regarding hospitalization, mortality, morbidity, and satisfaction with care. Donald and colleagues [70] detailed varying roles of the NP and CNS. They determined low risk of bias and recommended further studies be supported.

An additional scoping review was reported by Chavez and colleagues [71], focusing on NP care of the elderly, including 13 published reports, the majority of which included comparison of NP- and MD-provided care. Chavez and colleagues provided an extensively detailed review demonstrating several different models of care provision, cost, and patient satisfaction, all with demonstrated NP effectiveness.

An extensive scoping review of prescribing practices among Australian nurse practitioners was complete by Fong and colleagues [72], followed with an online survey regarding prescriptive practices [73]. Prescriptive authority was enacted in parts of Australia in 2001. Fong and colleagues explored effectiveness of prescribing and behavioral outcomes.

A US and Canada team, Hurlock-Chorostecki and colleagues [74], completed a scoping review focused on NPs in interdisciplinary teams. The review divided materials into literature reviews and primary research, including patient outcomes, workforce, credentialing, and settings. Details regarding NP role understanding, with several studies emphasizing contrast in role with physician assistant role were included. Additional detailing involved the acute care NP role, reflecting nine publications emphasizing hospital setting NP role. The publications included in the review were drawn from countries with well-established NP roles.

Limitations

Precision electronic searches are challenging, notably in the term *international*. Because there is a variety of labels used for *nurse practitioners* across the world, determining the meaning of the term is challenging. Further, the chapter is focused on contributions of nurse practitioners in research, but NPs can be hidden in other research, as authors or contributors to research, and there is no easy manner in which to identify those contributions. Despite these limitations, a substantial body of relevant published literature was identified and integrated for this chapter.

Discussion

Across the world, the role of the NP is well-developed and well-established in some countries, while continuing to evolve in other countries. Research completed with or by nurse practitioners has developed in parallel with the international migration of the concept of the nurse practitioner. Investigators explored in the research the varying roles and requirements for NPs in different countries, with consideration of education, practice outcomes, role responsibility, and advocacy and policy. The NP role is fairly well-established in most countries, but research on NP role continues as the role migrates and expands. The iterative pattern, cycling continually back to NP role parameters, continues to clarify the role and expectations in each country. As the NP role becomes imbedded in the healthcare culture, attention is focused on patient outcomes as well as more fully developed policy and local and national levels. Additional research related to effective practice and patient outcomes would build that foundation. An investigation of evidence-based and quality assurance projects would add to the discussion of changes in the healthcare system, as well as the discussion of patient outcomes and practice improvements.

Further research related to policy initiatives is critical, and sharing understanding of nuanced policy in any country or location is critical for comprehending the role in context. Increasing country-based initiatives to address policy issues related to practice must also be evidence-based; thus the work in research will serve practice, education, advocacy and policy, research, and leadership in all areas.

Technical Attention to Benefit Visibility of Publications. Searching for and collecting relevant published literature regarding research endeavors of nurse practitioners in varying countries is challenging and could be strengthened to assure visibility of NP-based research. Heightening visibility of the tremendous work done by NPs would be strengthened with meticulous attention to the following:

- Keyword development and assignment, including *nurse practitioner*, especially if the term is not included in the title or easily identifiable in the article abstract [75].
- Clearly labeling the research design in the abstract and the body of the paper.

- Title wording precision [76, 77].
- Inclusion of keyword *nurse practitioner* would also be helpful, especially if the term is not included in the title or easily identifiable in the article abstract [75].
- Assuring author credentials are clearly visible would be helpful for searches in which those credentials are critical factors (visibility of author credentials varies between and across journals).
- Thoughtful keyword listing to include the names of the country (or countries) in which the research is completed.

Completion of Proposed Research. There were at least 12 published protocols for research that were excluded for the purpose of this chapter. The importance of following through on these protocols, to produce the proposed research, cannot be understated. The protocols represent topics of marked interest to NPs, for example, including understanding NP role in Eastern Mediterranean countries [78], breast health in Arabic countries [79], methadone users and hepatitis C internationally [80], and practice standards and continuing education (Australia) [81]. Fully executed, these protocols would contribute substantially to scientific knowledge.

Conclusion

The role of the NP has migrated and been further developed across the globe. Nurse practitioners are challenging prevailing models of care and changing the healthcare system and making substantial contributions, as reflected in research NPs have published and that are integrated in this review. NPs are positively enhancing patient care, healthcare systems, and effective change in policy and advocacy. Although there is increased publication of robust research involving NPs, continued and escalated research is needed to improve understanding of the health challenges practitioners face with their patients or clients, and best practices to resolve illness and promote health are essential. Further understanding economics and cost of care in terms of cost and benefit for patients/clients, as well as cost of care from an organizational standpoint, are important in assuring resource allocation is appropriately managed. The proliferation of evidence-based practice projects, quality assurance initiatives, and DNP scholarly projects warrants an understanding of the individual and collective contribution to healthcare that these endeavors represent, but that are not included in this review.

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Nurse Practitioner Outcomes Evaluation

Ruth Kleinpell, April N. Kapu, Brigitte Woo,
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Introduction

The nurse practitioner (NP) role is recognized globally as an advanced practice registered nurse (APRN) who has acquired expert knowledge, complex decision-making skills, and clinical competencies for expanded practice [1]. NP models of care are models of care that are expanding as new role opportunities evolve. Therefore, identifying outcomes of NP care remains essential to advancing APRN practice. A recent report from the US Department of Health and Human Services, Health Resources and Services Administration, National Center for Health Workforce Analysis, addresses how the novel coronavirus disease 2019 (COVID-19) pandemic has impacted health-care and cites the role of APRNs including NPs, who are uniquely positioned to lead and support strategies for epidemic and pandemic responses [2].

Many studies have been conducted to demonstrate the impact of NP roles on quality of care, clinical outcomes, patient satisfaction, and cost of care [3–15]. More than three decades of research demonstrates that NPs provide high-quality, cost-effective, safe care that results in positive patient outcomes and satisfaction [16].

A number of individual studies as well as synthesis reviews have consistently identified the value of NP care in primary care, acute care, and other settings. An analysis of over 150 studies identified that the co-management of patients by a physician and NP can reduce individual workloads, avert burnout, enhance the quality of care, and expand access to care [17]. A study comparing primary care NP to primary care physicians or jointly attributed clinicians found that patients cared for

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by NPs had lower rates of hospital admissions, readmissions, and inappropriate emergency department (ED) use, as well as low-value imaging [3]. Similarly, the same researchers found in another study that patients cared for by primary care NPs had a lower risk of preventable hospitalizations, use of emergency room services, and other healthcare resources [5].

In a study of over 806,434 patients from 530 Veterans Affairs facilities, patients assigned to NPs were less likely to utilize primary care, specialty care, and inpatient services; had no difference in costs; and experienced similar chronic disease management compared to MD-assigned patients [7]. In a concise review of over 50 studies of NP care in acute and critical care settings over a 10-year period between 2008 and 2018, the results identified impact of the NP role in various ways including improved patient flow and clinical outcomes including reducing complications and improved patient care management with reduced time on mechanical ventilation, increased use of clinical practice guidelines, improved laboratory test use, and increased palliative care consultations, among other areas of impact [12]. Table 1 outlines the variety of outcome metrics that have been used to demonstrate NP outcomes.

The American Association of Nurse Practitioners outlines additional studies and meta-analysis that have been conducted to highlight the impact, outcomes, and value of the NP role [19].

Table 1 Common metrics used to highlight impact of the NP role

Quality/safety metrics

Catheter-associated urinary tract infection rates

Pressure ulcer incidence

Postsurgical glycemic control

Patient satisfaction rates

Role-specific metrics

For example, NP-led CHF clinic: rates of patient follow-up; ED and hospital readmission rates

Traditional outcome parameters

Length of stay

Readmission rates

Costs of care

NP care-specific metrics

Blood pressure control

Glucose control/HgA1C

Smoking cessation

Lipid management

Fall rates

Nosocomial infection rates

Restraint use

Medication compliance

Quality of life (pain management)

Patient knowledge

Patient self-efficacy

Patient satisfaction

Nurse satisfaction

Nurse retention rates

NP, nurse practitioner; CHF, congestive heart failure; ED, emergency department; HgA1c, hemoglobin A1c. Adapted with permission from Kleinpell [18]

Demonstrating Outcomes of NPs

Ongoing healthcare restructuring continues to change the way in which care is delivered, and as NP roles expand, the measurement of outcomes is an important parameter by which NP care can be evaluated. Healthcare restructuring continues to change the way in which care is delivered, and as APRNs’ roles expand, the measurement of outcomes is an important parameter by which APRN care can be evaluated. Knowledge of the process of identifying outcomes of NP practice and available resources that provide helpful information is essential for all NPs regardless of practice specialty or setting. The American Association of Nurse Practitioners developed a toolkit to outline the steps in assessing outcomes of NP practice (Fig. 1) [20]. The process involves identifying the focus of NP care, whether it relates to a specific NP-led initiative or aspect of NP care; identifying the specific outcome(s) to measure; obtaining the data, ideally through electronic medical records or other automated reports; and evaluating and disseminating the results.

While a number of outcome measures exist, identifying the metrics that are most impacted for a specific NP role or an aspect of care is essential. Table 2 outlines additional considerations for identifying NP outcome metrics.

Fig. 1 NP outcomes toolkit. (Adapted with permission from AANP [20])

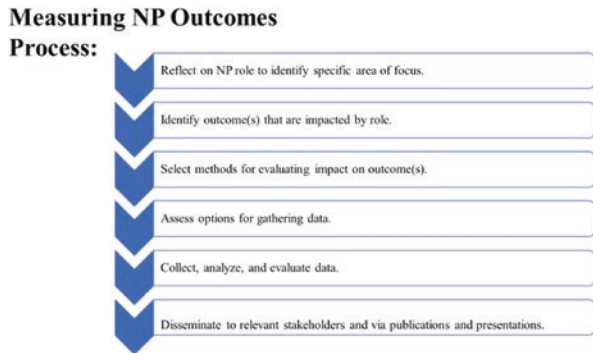


Table 2 Considerations for identifying NP outcome metrics

What are outcomes valued by the practice/organization?
Has there been an NP-led initiative that could result in comparison of outcomes?
Is there an opportunity to implement an NP-led project that could result in comparison of outcomes?
Has there been a new practice guideline implemented by the NP team that could result in comparison of outcomes?
Is there an opportunity to implement a new practice guideline that could result in comparison of outcomes?
What electronic data capture or records are available?
How can data reports be generated and provided to the NP team?
Consider identifying metrics as positions are developed/formed
Aim to capture metrics that reflect NP role activities
Garner information systems support for data abstraction and ongoing reporting

Adapted with permission from Kleinpell [18]

Showcasing NP Impact

The COVID-19 pandemic has provided a unique opportunity to further identify impact of the NP role. In the exemplar below, the impact of the pandemic on NP practice and the role that NPs played provides information on how the value of the NP was highlighted.

Exemplar: Highlighting the Impact of the NP Role During the COVID-19 Pandemic

Vanderbilt University Medical Center (VUMC) in Nashville, Tennessee, USA, leveraged its NP workforce from the beginning of the pandemic as the first COVID-19 cases came to Tennessee in early March 2000. First, the NPs launched a community hotline to field telephone calls from the community. Thousands of calls came in each day; most inquiries were related to signs and symptoms, questions about transmission, isolation, and whether to seek testing. The NPs developed a script and a frequently asked question and answers (FAQ) guide, working with technology experts to establish the phone line and collect data in the electronic medical record. They held daily trainings to train other NPs, nurses, and medical residents on how to work the hotline. They updated the script and FAQ daily as science evolved and more was learned about the virus. Interestingly, the NPs were the first to identify commonalities that later became key indicators of the virus. For example, in March of 2020, several callers complained of loss of taste and smell. The NPs reported this information to the Infectious Disease Center at VUMC. Within days, loss of taste and smell was noted to be a key symptom of COVID-19. NPs were front and center to the evolving knowledge and learnings.

Next, NPs led the development and management of community testing centers. They helped construct temporary clinic sites in parking lots and garages, community centers, churches, convention centers, and coliseums. They developed protocols for assessment, diagnosis, testing, and treatment. Most NPs worked at these sites in addition to their usual clinic or hospital work.

One NP team, whose primary service was to provide telehealth and home care services, established a program to see symptomatic patients in their home, which was especially helpful for homebound persons. They developed protocols for the use of personal protective equipment (PPE), assessment, testing, and treatment when caring for homebound patients. When the NPs were not visiting the patient in the home, they would follow up with telehealth visits.

NPs were working in the ED and throughout the hospital's acute and critical care wards. NPs collaborated and constructed an additional temporary ED in an adjacent parking garage, called the "epod" to offload the volume of the main ED. In the acute

and critical care areas, NPs expanded their teams and learned to cross cover in areas experiencing higher volumes. They worked closely with other members of the healthcare team to establish standards for care of the COVID-19 patient. They also navigated virus precautions to avoid transmission and developed standards for informing and involving family members in care, including the use of virtual technology when applicable.

And lastly, as vaccinations became available in the USA in December of 2020, NPs led the establishment and implementation of the vaccination centers to aid with vaccination rollout to thousands and thousands of Tennessee residents. NPs have worked with community leaders, healthcare volunteers, and the Vanderbilt University School of Nursing faculty and students to assure vaccination education and injections are accessible to everyone. Still in 2022, these NPs are providing mobile vaccination services to many underserved communities.

VUMC provides but one example of the efforts championed by NPs throughout the pandemic [21–23]. There are many examples of NP-led pandemic initiatives throughout the world. There is great opportunity to engage in collaborative scholarly review of this topic with NPs in many countries. The learnings from each NP and groups of NPs could lead to improved disaster preparedness, planning, and management in the future and on a global scale.

Exemplar: Emphasizing the Impact of NP-Led Initiatives to Improve Patient Care Outcomes

The COVID-19 pandemic prompted the need to shift nonurgent, subacute health services from tertiary hospitals to the community. In Singapore, the polyclinics are public outpatient healthcare centers nested within the precinct of residential neighborhoods. An APRN-led service was initiated at the polyclinic to bring specialist atrial fibrillation (AF) care from the hospital to the polyclinic.

The APRN-led AF clinic served as a “one-stop shop” for patients to receive care for common chronic conditions and AF. The APRN leading the AF clinic, originally trained as a generalist, received additional training to manage AF. The APRN worked with a family physician to render AF care, and clinical decisions were supported by an electronic decision support flow sheet. In the clinic consults, the APRN provided routine patient education, supplemented by a webpage (<https://nice-af.wixsite.com/livingwithaf>). This webpage provided context-specific AF content and was available in English and simplified Chinese. In addition, patients at the APRN-led AF clinic benefitted from fast-tracked appointments for hospital-based investigations such as treadmill electrocardiogram, Holter studies, and transthoracic echocardiogram. Lastly, the APRN could consult a hospital-based cardiologist through telecommunication whenever necessary. According to

the patient's condition, the APRN-led AF clinic appointments recurred every 3 to 6 months.

Preliminary evaluation of the APRN-led AF clinic reported significant improvements in several patient-reported outcomes: AF-specific quality of life, AF knowledge scores, medication adherence, patient satisfaction, and depression scores. Additionally, there were no adverse safety indications in the clinical outcomes, namely, cardiovascular hospitalization and stroke incidence, as well. The positive impacts on the patient outcomes in the APRN-led AF clinic were attributed to the consistent high-quality patient education and counseling by the APRN [15]. Besides the APRN, another feature of the AF clinic was the team of healthcare providers, whose consistent presence facilitated patient-provider rapport and more personalized care. The APRN-led AF clinic integrated care for the patients. Patients no longer had to visit multiple clinicians to have their other chronic conditions reviewed. This APRN-led AF service in the community received local media attention for its ingenuity and positive outcomes. It was also a great opportunity to increase public awareness and acceptance of APRNs.

Besides the above initiative, APRN-led rheumatology services in Singapore have shown to receive higher patient satisfaction and improved disease knowledge and medication adherence [24]. The similar outcomes have been demonstrated in APRN-led psychiatric services. A 2-year follow-up of these patients displayed significant correlations between satisfaction with APRN services and mental health recovery and general self-efficacy, respectively [25].

The measurement of NP outcomes can be integrated into practice through targeted efforts including collecting baseline data prior to implementing an NP-led initiative, using role-specific metrics that reflect the focus of NP care, planning for outcome evaluation when any new role is established, and building in outcome assessment as a part of the ongoing professional practice evaluation. A number of resources exist that can be useful for identifying NP impact. Table 3 provides a listing of websites resources of outcome metrics that can be useful for NPs.

Table 3 Websites resources of outcome metrics

American Association of Nurse Practitioners Outcomes Toolkit	https://www.aanp.org/images/documents/practice/NP_Patient_Outcomes_Toolkit.pdf
National Health Service of Scotland Advanced Nursing Practice Toolkit	https://www.advancedpractice.scot.nhs.uk/activity-analysis/stage-2.aspx
National Quality Forum	https://www.qualityforum.org
Agency for Healthcare Research and Quality Indicator examples	https://www.qualityindicators.ahrq.gov
<ul style="list-style-type: none"> a. Prevention indicators b. Inpatient quality indicators c. Patient safety indicators d. Pediatric quality indicators 	
Centers for Medicare and Medicaid Services Hospital Value-Based Purchasing Program	https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HVBP/Hospital-Value-Based-Purchasing ; https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/OutcomeMeasures
<ul style="list-style-type: none"> a. Clinical processes of care measures examples b. Hospital-acquired condition measures c. Patient experience of care measures 	
The Joint Commission National Patient Safety Goals examples	https://www.jointcommission.org/standards_information/npsgs.aspx
National Database of Nursing Quality Indicators	https://www.nursingandnqj.weebly.com/ndnqi-indicators.html
“Capturing Impact” toolkit from the Sheffield Hallam University	https://www.research.shu.ac.uk/hwb/nci/impact
National Association of Neonatal Nurses Quality Metrics Position Statement #3068	https://www.nann.org/uploads/Quality_Metrics_Position_Statement_Final.pdf

Adapted with permission from Kleinpell [18]

Summary

Globally, NP roles are continuing to evolve. The ongoing changes in healthcare continue to impact the way care is delivered and provide NPs with opportunities to demonstrate their value. Measuring NP outcomes is important in showcasing the impact of their care [25, 26]. Having knowledge of the process of assessing outcomes of practice is important for all NPs. The collective impact of NP care can be established only through continued focus on assessing outcomes of their care.

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Part II

NP Country Exemplars



The Nurse Practitioner in the USA: Role Exemplars

Mary Ellen Roberts and Joyce Knestrick

Introduction

Nurse practitioner practice has evolved in the decades since the role of the advanced practice nurse practitioner started in the 1960s in the USA. Currently, nurse practitioners (NPs) in the USA practice in almost every healthcare setting which include private practices, clinics, hospitals, emergency and urgent care sites, federal healthcare agencies such as the Veterans Administration (VA), nursing homes, retail clinics, school/university clinics, home health, and health departments. This chapter will discuss a brief history of the NP role in the USA, describe the impact of regulation at the national and state level on the NP role, present the roles of the NP in the USA, and present exemplars of the NP role in the primary care and acute care settings.

Development of the NP Role in the USA

As early as the 1960s, nurses began to tend to the primary care needs of children and families. Nursing identified gaps in the state of healthcare related to prevention of disease, family health, and health promotion. Nursing leaders established that

This chapter will discuss the role of the nurse practitioner in the USA and provide exemplars of the acute care nurse practitioner (ACNP) role, the primary care family nurse practitioner (FNP) role, and the psychiatric/mental health nurse practitioner (PMHNP) role. The exemplars showcasing NPs include an innovation by an acute care NP to provide consistent quality and affordable care in an acute care setting, the development of a community health center to serve low-income patients, and the increased access to mental healthcare provided by a PMHNP.

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nurses provided quality healthcare and improved access to healthcare services for children and families. The scope of the nurse evolved, and the nurse began to practice in roles similar to the primary care physician, which was the catalyst to the NP role. In 1965, Dr. Lorretta Ford (RN) and Dr. Henry Silver (MD) started the first nurse practitioner (NP) program at the University of Colorado [1]. The new role was initially developed to provide care for families to fill the primary care needs of children in rural areas. Health promotion, disease prevention, and family health were important aspects of the NP role. The NP role continues to evolve to meet the challenges of providing high-quality, cost-effective, access to healthcare for primary, specialty, acute, and chronic care in the USA. Although primary care was the initial aim, the role continues to evolve based on the changing healthcare needs of the populations in the USA. Nurse practitioners now specialize as pediatric primary or acute care NPs, family nurse practitioners, adult and geriatric primary and acute care NPs, women's health NPs, and psychiatric/mental health to be consistent health NPs. For nearly 60 years, NPs have been making advances in providing and improving access to healthcare to patients across the healthcare spectrum, including some of the most vulnerable and underserved populations in the USA.

Legislative Efforts

Although multiple organizations have joined to address legislative efforts related to nurse practitioner practice, licensure, and reimbursement, the American Association of Nurse Practitioners (AANP) has served as the leader in the policy arena. AANP is a national nurse practitioner organization formed by the merger of the American Academy of Nurse Practitioners (Academy) and the American College of Nurse Practitioners (ACNP) [2]. In the early 1990s, the Academy began advocacy on behalf of nurse practitioners and assisted with significant legislative changes to propel the NP role. Reimbursement for services provided by NPs was paramount to the Academy. NPs provided services for federal government employees but were not able to be paid for the services. This prompted the Academy to develop information in the policy arena to educate legislators regarding the role on the NP and the increased access to care provided by NPs for federal workers. The Academy worked to assure NPs were recognized by the Federal Employee Health Insurance as providers and were able to be directly reimbursed for services. Eventually the work of the Academy also led to the implementation of national legislation to provide direct payment to NPs caring for rural patients receiving Medicare which is a federal health insurance program for people 65 years of age and older, with disabilities or with end-stage renal disease in the USA. This groundbreaking legislation known as the Balanced Budget Act of 1997 became Public Law 105-33 and recognized NPs as Medicare providers and allowed them to receive payment for all eligible services under Medicare, similar to physician reimbursement [3]. This legislation was the catalyst which enabled the Academy to work with states to recognize NPs under Medicaid (joint state and federal programs that provide health coverage to eligible low-income patients) and by private insurance panels [4]. AANP has an office of

state government affairs and federal government affairs that continually work to monitor federal and state issues that impact NP practice, licensure, and reimbursement issues [5].

Geographical and Demographical Concerns in the USA

Geographically the USA is very diverse. The country is bordered on the north by Canada, the south by Central America, and the east and west by the Atlantic and Pacific Oceans. Within the 50 states, nurse practitioners work in rural, suburban, and urban areas. There are many definitions that distinguish these areas from one another which often leads to confusion. Sometimes population density is the defining concern; in other cases it is geographic isolation. Small population size typically characterizes a rural place. Rural areas are further constrained by physician shortages [6] and financially stressed hospitals with operating margins often too narrow to invest in upgrades to optimize care delivery [7]. As a result of these challenges, rural populations may engage with the healthcare system differently than their urban counterparts. Understanding the healthcare use of individuals in rural areas may yield insights into addressing these growing health disparities and the care that nurse practitioners provide.

Urban areas are another unique geographical part of the USA. According to US Census Bureau, *urban* is defined as areas that represent densely developed territory and encompass residential, commercial, and other nonresidential urban land uses [8].

As part of urban areas, nurse practitioners are vital to the care of the underserved, underinsured, and those without healthcare.

It is hard to define a suburb. Suburbs have several definitions; the most used one is census- convenient because it is easily constructed using publicly available census data [9], pg. 4. “This definition conceptualizes suburbs as remainders in relation to the political boundaries of cities. Though there are several variations of this definition, the basic structure treats cities as places or tracts that fall within principal cities, while suburbs encompass any space that falls outside of categorized cities but within metropolitan area boundaries” [9], pg. 4. The importance of knowing the geographical definitions in the USA cannot be emphasized enough in relation to the role of the nurse practitioner since the area often dictates the practice and autonomy of the NP. There are over 350,000 NPs practicing across the USA, providing care to individuals from all communities, socioeconomic class, and demographic backgrounds.

According to the AANP [10] National NP Survey, “NPs described themselves as White (79.4%), Black/African American (8.1%), Asian (4.3%), American Indian/Alaska Native (0.5%), Native Hawaiian/Other Pacific Islander (0.2%) or Multiracial (2.3%). A majority (95.0%) described themselves as not Hispanic or Latino, while 5.0 percent indicated they were Hispanic/Latino. On average, clinically practicing NPs were 49 years old, and approximately 90.6 percent were female. Respondents were also geographically diverse, with a large concentration of NPs located in the South. Additionally, when asked about their military background, 7.3 percent of NPs indicated current or previous active duty military service” [10].

Consensus Model

In 2009 the National Council of States Boards of Nursing (NCSBN) adopted through the endorsement of 48 national organizations the APRN Consensus Model. This model which includes the four APRN categories including the nurse practitioner further clarifies the role of APRNs in the USA. “In this APRN model of regulation there are four roles: certified registered nurse anesthetist (CRNA), certified nurse-midwife (CNM), clinical nurse specialist (CNS), and certified nurse practitioner (CNP). These four roles are given the title of advanced practice registered nurse (APRN). APRNs are educated in one of the four roles and in at least one of six population foci: family/individual across the lifespan, adult-gerontology, pediatrics, neonatal, women’s health/gender-related or psych/mental health” [11], pg. 6.

Nurse practitioners providing care along the wellness-illness continuum is a dynamic process in which direct primary and acute care is provided across settings. Nurse practitioners are members of the health delivery system, practicing autonomously in many diverse areas including family practice, pediatrics, acute care, geriatrics, and women’s health. Educationally NPs are prepared to diagnose and treat patients with undifferentiated symptoms as well as those with established diagnoses. “Both primary and acute care NPs provide initial, ongoing, and comprehensive care, including taking comprehensive histories, providing physical examinations and other health assessment and screening activities, and diagnosing, treating, and managing patients with acute and chronic illnesses and diseases. This includes ordering, performing, supervising, and interpreting laboratory and imaging studies; prescribing medication and durable medical equipment; and making appropriate referrals for patients and families” [11], pg. 9. The holistic care of a patient and family includes health promotion, disease prevention, health education, and counseling as well as the diagnosis and management of acute and chronic diseases. Nurse practitioners are prepared to practice in primary care and acute care settings which have separate national competencies and separate certification exams based on population.

Scope of practice is derived from educational preparation, the validation of the education via the attainment of national board certification in a population, and licensure that grants the legal authority to practice. Scope of practice is further delineated by the patient’s needs and is not setting specific.

Once certified as a nurse practitioner in a specific population, the NP can choose to specialize in a specific area such as emergency, dermatology, gerontology, cardiology, and oncology. Specialty exams are available for nurse practitioners practicing in select areas. These exams are usually administered by specialty organizations.

Nurse Practitioner Roles in the USA

According to the American Association of Critical Care Nurses [12], acute care nurse practitioners (ACNPs) are educated, certified, and licensed to care for those individuals who are physiologically unstable, technologically dependent, critically ill, and highly vulnerable to complications, have rapidly changing conditions, or

have an illness which is chronically complex. Since scope of practice is defined by the patient's needs, an acute care nurse practitioner may care for patients who fall within their scope of practice in any setting.

The primary care nurse practitioner, as defined by the National Organization of Nurse Practitioner Faculties in collaboration with the American Association of Colleges of Nursing, is one who is educated, certified, and licensed to provide comprehensive, chronic, continuous care characterized by a long-term relationship with the patient. A primary care nurse practitioner may work in almost any setting provided that the needs of the patients for whom they are providing care do not require the expertise of an acute care nurse practitioner due to acute onset physiologic instability.

Both the acute and primary care nurse practitioner may lead interprofessional teams, evaluate and diagnose medical and nursing conditions, develop treatment plans, and monitor the response to treatment. They are educated, certified, and licensed to provide restorative care in emergent and non-emergent situations.

Nurse Practitioner Programs

In the USA, nurse practitioner programs are offered at the master's degree in nursing, post-master's certificate, or as Doctor of Nursing Practice (DNP). Several factors influenced the move to graduate education in the USA. The demand for structured NP programs and the complexity of patients seen by NPs increased; therefore NP education moved to the graduate level. In the late 1980s, over 90% of NP programs were at the master's or post-master's degree level.

In addition to primary care, NPs began to answer the need for hospital-based roles, and in the 1990s, the role of the acute care NP began to emerge. NONPF created the National Task Force on Quality Nurse Practitioner Education (NTF) in 1995 and published the Criteria for Evaluation of Nurse Practitioner Programs. The Commission on Collegiate Nursing Education revised its Standards of Accreditation to include the Criteria for Evaluation of NP Programs in 2005. The responsibilities of the NP began to change, and healthcare needs of the USA increased in complexity. Complex issues of billing and managing a practice impacted NP practices and specialization called for healthcare providers including NPs to develop pathways for addressing unmet educational needs. The changes prompted nursing to move advanced practice to the Doctor of Nursing Practice (DNP). Schools are transitioning master's programs to the DNP.

In 2014, approximately one-fourth of the NP programs transitioned to the DNP. Although the MSN remains the entry into NP practice, programs continue to move from the master's programs to the bachelors to DNP (BSN-DNP). The movement to the DNP is in line with the Future of Nursing report and NONPF's [13] initiative to move to the DNP by 2025.

In addition, NONPF recently revised the NTF Standards to improve the quality and rigor in NP programs. NONPF recommends a minimum of 750 hours in all

programs of direct patient care, noting that the student may need additional hours if competencies are not met.

Nurse practitioner programs apply for accreditation by nursing certification bodies. The purpose of accreditation of programs is to ensure that nursing education programs meet the standards of quality across the USA. Accreditation of programs advances the profession and greatly enhances the rigor and overall quality of care provided by NPs. In the USA there are three national nursing accreditation bodies which are recognized by the US Secretary of Education: the Commission on Collegiate Nursing Education (CCNE, <https://www.aacnnursing.org/CCNE>), the Accreditation Commission for Education in Nursing (ACEN, <https://www.acenursing.org>), and the NLN Commission for Nursing Education Accreditation (CNEA, <https://cnea.nln.org>).

Nurse Practitioner Certification

Most states in the USA require national certification of the NP for licensure. Certification authorizes NPs to demonstrate their population expertise and validates their knowledge to employers and patients. Certification programs assess the competencies of graduate nurse practitioners to provide safe effective high-quality care. Certification programs are accredited by the American Board of Specialty Nursing Certification (ABSNC) and the National Commission for Certifying Agencies (NCCA). The ABSNC is the only accrediting body specifically for nursing certification. ABSNC accreditation is a peer-review mechanism that allows nursing certification organizations to obtain accreditation by demonstrating compliance with the highest-quality standards available in the industry. The NCCA is the private not-for-profit accrediting branch of the Institute for Credentialing Excellence (ICE), which is the national standard-setting organization for credentialing groups including certification boards, licensing boards, and associations. The NCCA uses a peer-review process to establish accreditation standards; evaluate compliance with the standards; recognize programs that demonstrate compliance, monitor, and enforce continued compliance; and serve as a resource on quality certification.

Candidates for certification sit for the exam that aligns with graduate education, role and population. Candidates must have successfully completed:

- The APRN core (advanced physical assessment, advanced pharmacology, and advanced pathophysiology)
- The NP educational program's required number of faculty-supervised direct patient care clinical hours
- The nationally recognized competencies of the nurse practitioner role and the population
- Completion of a nationally accredited graduate, postgraduate, or doctoral educational program that is accredited by a nursing accrediting organization recognized by the US Department of Education and/or the Council for Higher Education Accreditation
- Current, active, professional nurse licensure in the USA

Table 1 Nurse practitioner certification bodies in the US

Table of nurse practitioner certifying bodies	Certification type*
American Academy of Nurse Practitioners Certification Board	FNP, AGNP, ENP
American Association of Critical Care Nurses Certification Corporation	ACNP-AG
American Nurses Credentialing Center	FNP, AGPCNP, AGACNP, PMHNP
National Certification Corporation	NNP, WHNP
Pediatric Nursing Certification Board	CPNP-AC, CPNP-BC

Depending on certification agencies, other requirements may be required to sit for initial certification.

Once initially certified, nurse practitioners must recertify and maintain certification through a variety of ways including:

- Continuing education
- Pharmacology hours
- Clinical practice
- Current RN licensure
- Table 1 lists the bodies that certify NPs in the USA.

Certification type	
Family nurse practitioner	FNP
Adult-gero primary care nurse practitioner	AGNP
Adult-gero acute care nurse practitioner	AGACNP or ACNP-AG
Psych mental health nurse practitioner	PMHNP
Neonatal nurse practitioner	NNP
Women’s health nurse practitioner	WHNP
Pediatric nurse practitioner (primary care)	CPN-BC
Pediatric nurse practitioner (acute care)	CPNP-AC
Emergency nurse practitioner	ENP (specialty)

Could you add some information about NP salary and NP education fees in the USA? According to the US Bureau of Labor Statistics, the mean annual salary for nurse practitioners is \$118,040. This salary varies by state and region of the country. California is the highest-paying state at \$151,830 and Tennessee at \$95,120. Typically the nurse practitioners in the West and Northeast have the highest-paying salaries. Salaries vary by specialties with psychiatric/mental health with the highest salary and pediatrics the lowest [14].

The cost of education varies by degree (MSN or DNP as entry) and type of school. Typically private schools are more expensive where a state or public school is not. It is difficult to estimate the cost of education due to the many variables associated with cost.

Exemplar of the Acute Care NP

In the hospital intensive care unit (ICU), the ACNP functions collaboratively with the critical care provider team consisting of the ACNP, attending physician (intensivist), one or two critical care medicine fellows, clinical pharmacist, and other

members of the delivery team, including bedside nurses, primary care nurses, and respiratory therapists. The ACNP manages the patient from admission to discharge from the unit.

The day begins with a clinical huddle, or meeting, with the team members who provided care during the previous night, highlighting changes in patients' conditions, and providing information on new patients. The ACNP then participates in patient rounds, examining the patient. All data is reviewed by the ACNP including vital signs, lab studies, EKG and rhythm strips, all radiological studies, and a review of medications, continuous infusions, and fluid balances. Based on the clinical examination and review of data and with input from members of the delivery team, a comprehensive plan of care is devised for the patient. The ACNP assumes varying roles during these patient-focused rounds (e.g., presenting and reviewing data, doing the physical examination, writing orders, calling consultants). During this time, the ACNP notes issues to be addressed later; treatment outcomes to be evaluated; planned procedures, culture, and diagnostic test results to review; family conferences; and expected admissions and discharges. Once rounds are complete, the ACNP will begin to address some of the specific issues on their work list.

Once this is complete, the ACNP begins to see their patients to provide the care needed for the day. This includes transfer orders if warranted, evaluating the appropriateness of interventions, and determining if changes to medications or other therapies are needed. The ACNP reviews each patient's history and physical (H&P) and restarts home medications that are appropriate to the patients' comorbidities. They write transfer orders and collaborate with the bedside nurse to ensure that all patient care issues have been addressed in the orders. Patient and family education are an important part of the day. During the day, the ACNP may perform other invasive procedures, such as inserting arterial lines, central venous lines, dialysis catheters, chest tubes, and nasoduodenal feeding tubes and performing thoracentesis, endotracheal intubation, and removal of intra-aortic balloons. Health promotion and protection assessment and intervention are integral to the ACNP's role but in different areas than one might expect in the primary care setting. For example, in the ICU, the ACNP addresses stress ulcer prophylaxis, preventing complications from immobility, promoting skin integrity, and optimizing nutritional support.

Throughout the day the ACNP will monitor and provide problem-focused care in response to changing patient needs and condition. The ACNP will provide care for such issues as hypotension, hypertension, low cardiac output, low urine output, bleeding, low oxygen saturation, fever, difficulty with ventilation or ventilator changes, agitation and delirium, mental status changes, inadequate pain management, arrhythmias, electrolyte abnormalities, and problems with lines or catheters. Patients are seen multiple times during the day, and the ACNP may perform directed physical examinations, formulating a treatment plan, and reassessing clinical findings to evaluate response to therapy. Management options may be reviewed by consultants from other teams, such as cardiology, renal, and infectious diseases, to coordinate care and treatment plans.

New admissions are another component of the ACNP's day. Review of orders, physical exam, and plan of care will be part of the ACNP responsibility for newly admitted patients.

At the end of the day, a clinical huddle is done with the oncoming shift, and a continuous plan of care is developed with the incoming members of the team.

As a permanent member of the team, the ACNP provides needed continuity to care. The ACNP is instrumental in developing clinical protocols and communicating care expectations to other members of the team. The ACNP interacts with social services, case managers, physical and occupational therapists, and nutritional consultants. Discharge planning is an integral part of their day. Quality improvement is an essential part of the ACNP's role. (See exemplar below.) Research initiatives and activities round out the role of the ACNP.

A recent implementation of an acute care APN-led COPD discharge education program to decrease 30-day readmission rates has shown that the work of the acute care NP results in improved patient outcomes. This resulted in a cutting-edge and state-of-the-art discharge education program at a major medical center. The primary outcomes were decreased 30-day readmission rates. This was achieved by establishment of a 7-day pulmonary follow-up to evaluate signs and symptoms which require an emergency pulmonary visit; importance of influenza and pneumococcal vaccination; proper inhaler technique utilizing the 10-second breath hold with "teach back" method; importance of physical activity and pulmonary rehabilitation (PR); home oxygen needs; home nebulizer needs; importance of proper nutrition; assessment of anxiety, depression, and gastrointestinal reflux (GERD); and assessment for the safest discharge location based on the patient's risk for readmission. This NP-led initiative has resulted in clinically significant findings as a suitable approach to decrease 30-day readmission rates with outcomes including improved quality of care, a multidisciplinary transition of care COPD DISCHARGE PLAN 6 approach to the patient with COPD, decreased financial burdens for this medical center, and implementation of pulmonary evidence-based guidelines. A recent study of this population in the facility in which this took place resulted in the following findings: 149 subjects were included in the pre-intervention cohort and 214 subjects were included in the post-intervention cohort. Thirty-day readmission rates were lower in the post-intervention cohort compared to the pre-intervention cohort, 22.4% vs. 38.3% ($p = 0.001$). A reduction in 60-day and 90-day readmission rates was also observed, 13.7% vs. 40.3% ($p < 0.001$) and 10.1% vs. 32.2% ($p < 0.001$), respectively [15].

This innovation by an acute care NP shows an effective way to provide consistent quality care in an acute care setting, while decreasing hospital readmissions and providing high-quality, affordable patient care.

Exemplars of the Primary Care NP

In the best-case scenario, the primary care nurse practitioner practices autonomously in collaboration with other healthcare professionals in settings such as a clinic, private practice, convenient care, community clinics, and health centers. Since the role of the family nurse practitioner (FNP) is the certification of 70% of NPs in the USA [1], this exemplar will focus on the FNP role. However, there are pediatric nurse practitioners (PNP), adult geriatric nurse practitioners (AGNP), and

women's health nurse practitioners (WHNP) who practice in the primary care areas, and the practice is similar to the FNP but each has unique specialized areas.

In the USA there are 26 states with full practice authority (FPA). In states with FPA, state laws permit NPs to evaluate and diagnose patients, order, and interpret tests, initiate, and manage treatments and prescribe medications without any regulatory restrictions exclusively under the licensure authority of the State Board of Nursing. The National Academy of Medicine recommends this model [1]. In the 13 reduced-practice states, the state practice and licensure laws reduce the ability of NPs to engage in at least 1 element of NP practice. In the reduced-practice states, state laws require a career-long collaborative agreement that is regulated with another healthcare provider (often a physician) for the NP to provide patient care or limits the setting of the NP practice [1]. An example of a setting limitation would be permitting the NP to practice with FPA but only in a rural area, not an urban area. The remaining 11 states restrict NP practice to engage in at least 1 element of NP practice. The state laws in restricted practice states require career-long supervision, delegation, or team management by another healthcare provider for the NP to provide care [1]. Regardless of the licensure, NPs in every state provide quality, evidence-based primary care to patients. In all 50 states, primary care nurse practitioners assess patients with acute and chronic illness, provide wellness visits, use diagnostic reasoning to make diagnoses, order laboratory and diagnostic testing, prescribe medications (in all 50 states), provide patient education, and focus on health promotion and disease prevention. Since NPs are part of the community served, the NP is aware of the needs related to the social determinates which impact health.

The following is an exemplar of the impact a FNP had in the practice setting. A family nurse practitioner (FNP) provides primary care for patients across the lifespan (birth to death). A FNP in a rural area noticed that many of the residents of the area were uninsured or underinsured. Geographically the area was somewhat isolated with limited public transportation, and the closest tertiary care hospital was over 50 miles away. Therefore, the members of the community did not access the healthcare system until the disease process was severe and costly to the patient, family, and the healthcare system. In addition, children were behind in screenings and immunizations. The Medicare—national insurance for citizens over the age of 65—population were also limited on provider choices in the community. The FNP worked with the community to develop a NP-run community health center. The center worked to provide services on a sliding scale based on income for the uninsured. The FNP worked to help patients access Medicaid (a state and federal insurance program for low-income populations). The center also worked to have NPs recognized on private insurance panels so that all members of the community had access to care. The center provided primary care services which included health and wellness visits, care of acute and chronic medical conditions, education, and select laboratory services. The FNP worked with local hospitals and healthcare systems to recognize NP providers and to accept orders for laboratory, diagnostic procedures, and other services such as physical and occupational therapy. As the clinic grew, several FNPs and a WHNP joined the practice. Eventually the practice added a

medical assistant, a registered nurse, a social worker, a diabetic educator, a receptionist, and a medical billing specialist. Since the practice was in a reduced-practice state without FPA, a physician was hired as a collaborator; however, the FNP remained the medical director. The staff lived in the community and the clinic worked to educate and train staff from within the community. The clinic provided immunizations and health screenings and eventually added a mobile van to improve access to care.

The NPs in the community health center provide patient-centered, evidence-based care that is sensitive to the social determinants of health in the community. The results of their work included improved access to care and improved childhood screenings and immunization rates, more patients with diabetes reached an A1C of 7 or less, and patients with hypertension were in line with the current guidelines. In addition, the use of the higher-cost emergency room care decreased. Prevention programs such as smoking cessation and diabetes education were offered in the clinic as well as in the community, which contributed to improved health outcomes which was the mission of the community health center.

Exemplars of the Psychiatric/Mental Health NP

As an advance practice nursing role that has developed in response to the increased need for mental health services in the USA, psychiatric/mental health NPs (PMHNPs) can see people of all ages for mental health issues. PMHNPs may also see specialty populations such as pediatrics, adolescents, and geriatrics. The PMHNP can conduct a comprehensive mental health assessment; provide individual, group, couple, or family therapy; prescribe medications; order and interpret lab and diagnostic testing; and educate and counsel patients. The PMHNP may practice autonomously depending on the state laws or may work in a practice with other clinicians. The PMHNP works in collaboration within the healthcare team to optimize the patient's overall health [16].

The following is an exemplar of a PMHNP in an urban setting. A registered nurse working in a mental health unit in a local hospital had difficulty making follow-up appointments as patients were discharged from the mental health unit. The RN discovered the wait time for a noncrisis mental health appointment in her community averaged 6–9 months. At first the RN considered obtaining a Doctor in Nursing Practice (DNP) to become an FNP, but after careful consideration, entered a DNP program for PMHNPs. After graduation, the new PMHNP began to practice in a community mental health clinic. Within a year, the PMHNP had a full panel of patients and was able to round in the hospital mental health unit that started the quest to improve access to mental healthcare. The NP also initiated group mental health activities in conjunction with the clinic and the inpatient unit to improve access to services. The NP was able to influence and mentor other RNs in the unit to consider becoming a PMHNP, growing the practice and increasing the mental health services in the community. The work of the PMHNP was important to the community as the NP was a member of the community she served. The NP was

aware of the cultural norms of the community, the support services available, and the community stigma related to mental illness. This resulted in an improved trust within the community toward mental health services.

Conclusion

In conclusion this chapter provides an overview of role of the nurse practitioner in the USA. Nurse practitioners hold a variety of roles in different patient populations as defined by the Consensus Model for advanced practice. The capacity to change is crucial in a profession that is rapidly changing. Role development for the nurse practitioner is a two-phased approach according to [17]: role acquisition through education and role implementation after graduation.

Nurse practitioner role development in the USA has been described as dynamic, complex, and situational [17]. Each state has various laws that govern nurse practitioner licensure and practice with full practice authority recognized as the preferred model in which nurse practitioners may practice autonomously. Frameworks for geographical areas and exemplars of the nurse practitioner role are presented. The nurse practitioner role will continue to evolve in response to organizational and healthcare system changes as well as societal demands for the high-quality patient-centered care provided by nurse practitioners in the USA.

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The NP Role and Practice in Canada

Minna Miller, Natasha Prodan-Bhalla, and Stan Marchuk

Introduction

Canada is the world's second largest country based on area that covers nearly 10 million square kilometers from the Atlantic Ocean in East to the Pacific Ocean in the West, to the Arctic Ocean in the North, with 10 provinces and 3 territories and a population of 38 million [1]. Canada has 304,558 licensed registered nurses [2] and 7136 licensed nurse practitioners (NPs) [3]. Canadians enjoy a not-for-profit, publicly administered, universal healthcare system funded by taxes that provides access to hospital and practitioner/physician services to all residents based on need, not ability to pay [4]. The primary care crises of the past several decades have positioned NPs in key roles to help meet population healthcare needs with improved access to care. In this chapter we present the historical context and current state of NP role development, education, regulation, and practice in Canada, highlight Canadian NP leadership examples, and illuminate unique Canadian contributions to NP role development, implementation, and evaluation globally.

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Historical Evolution of NP Role, Education, Regulation, and Practice

The early beginnings of advanced practice nursing (APN) in Canada date back to the 1890s to outpost nurses who worked in the isolated areas of the north [5, 6]. It was not until the 1960s that APN roles became more formalized with Dalhousie University in Halifax, Nova Scotia, developing the first nurse practitioner (NP) program in the country to prepare graduates to work in the remote nursing stations of the north [6, 7]. The key drivers for the NP role implementation in the late 1960s and early 1970s were the new, publicly funded universal medical insurance program, perceived physician shortage/maldistribution, and a movement toward increased medical specialization [6]. The Boudreau report (1972) [8] and subsequent joint statement by the Canadian Nurses Association (CNA) and Canadian Medical Association joint committee (1973) [9] supported the implementation of the NP role with recommendations for legislative changes for advanced practice and university programs to prepare NPs for both rural and urban settings [7–9]. NP role implementation into primary care settings was further supported by a landmark Canadian randomized controlled trial documenting NP care equivalency to physician care within the same settings [10]. While a number of university programs preparing NPs were developed between 1970 and 1983, most were closed by 1983 due to lack of provincial/territorial legislation, absence of remuneration mechanisms, perceived oversupply of physicians in urban settings, poor public awareness of the role, and limited support from health professionals and policy makers [7].

However, healthcare reforms of the 1990s resulted in a renewed interest in NP role development with a need to contain healthcare costs, optimize resources, and shift focus from acute care to community-based primary care with greater emphasis on health promotion and disease prevention. Simultaneously a shortage of medical residents and lack of continuity of care for hospitalized patients in acute care further prompted the introduction of NPs with graduate-level preparation into these settings [6].

The Pan-Canadian Nurse Practitioner Initiative (CNPI) [11] provided the impetus for a more robust nurse practitioner role implementation into the Canadian healthcare system with related toolkit [12] and frameworks [13, 14] recommending a standardized approach to NP role legislation/regulation, education, and practice. A 10-year retrospective review of the CNPI ([15], p. 4) reported significant progress on many of the 2006 recommendations, including an overall evolution of the NP role further supported by harmonization and expansion of the scope of practice across jurisdictions, Pan-Canadian title protection, common role description, and adequate professional liability coverage, with 28 schools across the country offering at least 1 NP program in 2014. Standardization of a master's degree NP education was significant for role advancement [15]. The Canadian

Nurses Association has played a key role in the promotion and implementation of NP roles across the country. It managed the CNPI budget of \$8.9 million in 2004–2006, engaged stakeholders, and produced numerous related documents and reports. The Canadian Nurses Association together with the Canadian Association of Advanced Practice Nurses hosted the 2008 International Council of Nurses NP/Advanced Practice Nurse Network Conference with over 600 participants from over 31 countries [7].

Current State of NP Roles, Education, Regulation, and Practice

Legislation to enact the NP role in Canada took many years to be actualized with the province of Alberta being the first to pass legislation in 1996 and the Yukon Territory the last in 2009 [6]. As of December 2022, there were 9235 licensed NPs in Canada, with the most populous provinces, Ontario ($n = 4626$) and Quebec ($n = 1217$) having the most robust NP workforce, followed by British Columbia (890), Alberta ($n = 812$) and the Yukon ($n = 24$) with the least number of NPs [3]. Nurse practitioners work in urban, rural, and remote areas of the country in primary care, long-term care, palliative care, and acute care in a range of specialties including oncology, cardiology, respirology/pulmonology, dermatology, and surgical services [3]. NPs can also work in medical aesthetics [16] and can provide medical assistance in dying, MAiD [17].

While title protection, graduate education, and autonomous practice are common in all provinces and territories, variability in 30 of the 38 NP scope of practice activities was identified by the Canadian Institute for Health Information (CIHI) [18]. The regulation and education of NPs and delivery of health services is a provincial/territorial responsibility; thus a standardized national approach is challenging. NP education is available in five streams. Table 1 illustrates the NP stream of education offered in each province/territory, the respective university, and the regulatory body that governs NP scope of practice. Entry-to-practice requires graduate-level education and completion of a written certification exam for all provinces/territories. In addition, British Columbia and Quebec require an observed structured clinical exam (OSCE) for licensure.

A national study by Scanlon et al. [19] found that NPs used the same competencies across all provinces/territories regardless of their practice stream and that NP practice was consistent. These results support a greater harmonization of NP credentialing requirement and a national approach to NP examinations while some variations across jurisdictions exist. Variability in credentialing and entry-to-practice exams limit the ease of mobility across jurisdictions [19]. Similar to other countries with established NP roles, research demonstrates that NP care is safe, effective, efficient, and patient centered and is comparable to that of their physician colleagues [20].

Table 1 Province/territory, type of NP education available, name of academic institution offering NP education, and name of regulatory body for NPs

Province/ territory	Types and number of NP programs offered	Universities offering NP programs	Regulatory bodies for NPs (scope of practice)
Yukon	None	None	Yukon Registered Nurses Association
Northwest Territories/ Nunavut	None	None	Registered Nurses Association of the NorthWest Territories and Nunavut
British Columbia	Primary health care (4)	Thompson Rivers University, University of British Columbia, University of Northern British Columbia, University of Victoria	British Columbia College of Nurses & Midwives
Alberta	Primary health care (2) Adult (1) Neonatal (1)	Athabasca University, University of Alberta	College of Registered Nurses of Alberta
Saskatchewan	Primary health care (2)	Saskatchewan Polytechnic/University of Regina	College of Registered Nurses of Saskatchewan
		University of Saskatchewan	
Manitoba	Primary health care (1)	University of Manitoba	College of Registered Nurses of Manitoba
Ontario	Primary health care Adult (1) Pediatric (1)	Lakehead University, Laurentian University, McMaster University, Queen's University, Ryerson University, University of Ottawa, University of Windsor, Western University, York University, University of Toronto	College of Nurses of Ontario
Quebec	Adult (3) Mental health (5) Neonatology (2) Pediatrics (2) Primary health care (7)	Université de Montréal, Université de Sherbrooke, Université du Québec à Chicoutimi, Université du Québec à Rimouski, Université du Québec à Trois-Rivières, Université du Québec en AbitibiTémiscamingue Université du Québec en Outaouais, Université Laval, Université McGill	Ordre des infirmières et infirmiers du Québec
Newfoundland and Labrador	Primary health care (1)	Memorial University	College of Registered Nurses of Newfoundland and Labrador
Prince Edward Island	Primary health care (1)	University of Prince Edward Island	College of Registered Nurses of Prince Edward Island

(continued)

Table 1 (continued)

Province/ territory	Types and number of NP programs offered	Universities offering NP programs	Regulatory bodies for NPs (scope of practice)
New Brunswick	Primary health care (2)	Université de Moncton, University of New Brunswick	Nurses Association of New Brunswick
Nova Scotia	Primary health care (1)	Dalhousie University	Nova Scotia College of Nursing

Unique Canadian NP Leadership Examples

The Nurse Practitioner Association of Canada

The Nurse Practitioner Association of Canada (NPAC), established in 2017, is the national professional voice for nurse practitioners, representing the profession to organizations and governments, nationally and internationally. NPAC is recognized as a national leader, engaging and advising on health and social policy issues that impact the development and delivery of health and social services to Canadians. NPAC's engagement includes ensuring a NP perspective is present to inform and shape public policy in primary care, acute care, long-term care, and home and community care. NPAC's advocacy includes working with ministries of health, mental health, and addictions along with justice and finance. The association participates in numerous initiatives to raise the awareness of the nurse practitioner role and how the profession contributes to the delivery of health services in Canada.

The Principal Nursing Advisors Task Force

At the federal level, NPs are providing an advanced practice nursing lens as members of the Principal Nursing Advisors Task Force, comprised of key nursing leaders from all provinces and territories who meet monthly. This group is a Task Force of the Health Canada Committee on Health Workforce, providing key expert advice and policy recommendations on a variety of workforce issues, including implementing better pathways for internationally educated nurses and workforce mobility across provinces and territories. [A Vision for the Future of Nursing in Canada \[21\]](#) sets out the key policy recommendations for all nursing designations in Canada.

Nurse Practitioner-Led Clinics

Nurse practitioner-led clinics (NPLCs) have been a great success in Canada, providing access to primary care for those who did not previously have a regular primary care provider [22, 23]. In 2007, the NPs in northern Ontario were successful in leading the introduction of the first NPLC in the province, after 20 months of

lobbying the provincial government, negotiating funding for the clinic with the Ministry of Health, developing a business plan, establishing a unique NP leadership governance structure, and organizing clinic operations [24, 25]. Since 2007, NP-led clinics have become an established model of care in Ontario, with 25 clinics in operation. More recently British Columbia (BC) has opened its first three such clinics in 2020, with early data showing increased attachment to primary care providers with good outcomes. The BC model of care, like the Ontario model, is interdisciplinary and interprofessional, with a block of funding going to the providers in the clinic to deliver a wide range of services. In addition to pioneering NPLCs in Ontario, the province has also pioneered the first NP-led hospital model in Whitby at Lakeridge Health with NPs as the most responsible providers/hospitalists [26, 27].

Nursing Policy Secretariat

In British Columbia, one of Canada's largest provinces, NPs have provided leadership as executive directors at the Nursing Policy Secretariat (NPS) in the Ministry of Health. The NPS was established in 2011 after the provincial government and the provincial bargaining unit for nurses recognized the need for nursing leadership and vision within the Ministry of Health. Initially a Chief Nurse Executive role was established on a temporary basis to discuss and identify priority recommendations [28] in order to develop better supportive policy for nurses across the province. One of the key focus areas has been to optimize NP scope of practice, remove legislative barriers, and implement NP-led primary care clinics.

Nurse Practitioner Leaders in Chief/Executive/Director Roles

Two Canadian provinces, Ontario (ON) in 2018 and British Columbia (BC) in 2020, have appointed a NP as the provincial Chief Nursing Officer within their respective governments, ensuring the voice of nurses is at the senior executive level in government. In increasing numbers, NPs are in executive positions as executive directors/vice presidents within healthcare organizations having oversight of interdisciplinary staff, participating in key senior executive discussions and policy making [26, 29]. The VP of Quality and Safety, Clinical Informatics, and Chief of Nursing and Allied Practice in Provincial Health Services Authority in BC is a NP who oversees the quality and safety in the health authority in collaboration with the VP of Medicine. Both the ethics and clinical informatics team also report to her providing a very broad yet integrally linked portfolio for high-quality practice. This role, as well as others across the country, includes 1 day a week of clinical practice to maintain NP licensure and bedside lived experience. Furthermore, NP leadership roles as department heads and medical directors through the amendment

of hospital acts have enabled NPs to be recognized as medical staff alongside physician colleagues [30, 31]. These roles provide oversight and monitoring of quality medical care provided by NPs as well as facilitate access to care by permitting NPs to be the most responsible providers to admit, discharge, and maintain continuity of care.

Unique Canadian Contributions to NP Role Development, Implementation, and Evaluation Globally

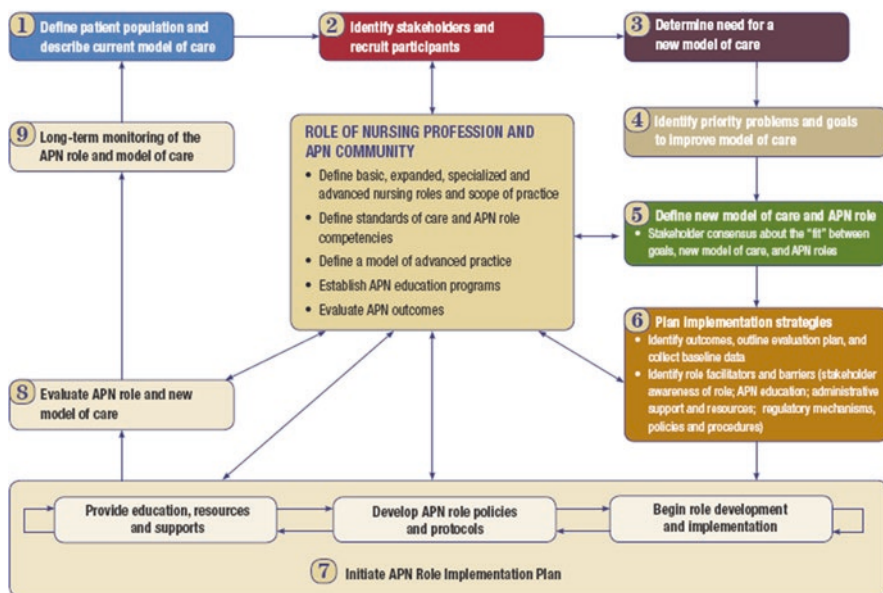
Canadian Centre for Advanced Practice Nursing Research

Dr. Alba DiCenso held the inaugural research chair in advanced practice nursing (APN) from 2001 to 2011 with a focus on building APN research capacity and expertise within the country. With its \$3.5 million funding from the Canadian government's health research agency, the program accepted 24 graduate students from 5 provinces and completed 48 APN-specific research projects with hundreds of related publications and presentations [32]. Once the funding ended, the Canadian Centre for Advanced Practice Nursing Research (CCAPNR) was established at McMaster University to continue the legacy. The impact of the CCAPNR team contributions thus far is significant. Since 2011 the team has secured funding in excess of \$23 million for 102 peer-reviewed grants and nearly \$2 million for 24 capacity-building initiatives and contracts. Additionally, it has published 210 articles in peer-reviewed journals, provided hundreds of presentations at various conferences/forums, and provided leadership locally and globally to advanced APN role implementation and development through education, policy, and regulation [32, 33].

The PEPPA and PEPPA-Plus Frameworks

The PEPPA framework, a participatory, evidence-based, patient-focused process for APN role development, implementation, and evaluation framework (Fig. 1), was developed to provide researchers, policy makers, administrators, and clinicians a nine-step guide to optimize the development and utilization of APN roles [32, 34]. Key strategies emphasize stakeholder engagement and development of goal- and outcome-oriented APN roles to address unmet patient health needs [35]. In Canada, ministries of health and nursing associations have recommended the use of the framework as best practice for APN role implementation. Outside of Canada, it has been utilized in 21 countries across the world to support APN role implementation, evaluation, and related policies, education, and research with implementation toolkits also readily available [32]. The PEPPA-Plus framework was subsequently introduced to provide more enhanced guidance for APN role evaluation [35].

The PEPPA Framework



From: Bryant-Lukosius, D., & DiGerro, A. (2004). A framework for the introduction and evaluation of advanced practice nursing roles. *Journal of Advanced Nursing*, 48(5), 530-540.

Fig. 1 The PEPPA framework: A participatory, evidence-based, patient-focused process for APN (PEPPA) role development, implementation, and evaluation framework [34]

Conclusion

The integration of NPs into the Canadian healthcare system over the past few decades has been impressive as are the contributions to NP role advancement globally. However, far too many Canadians still do not have a primary care provider or timely access to needed services. There is also disparate deployment of NPs across provinces. The Vision for the Future of Nursing in Canada calls for a pan-Canadian approach to the NP regulatory framework, integrated entry-level NP education, and optimized scope of practice, while the ICN promotes massive investment in education (faculty development and students) and nursing leadership capacity building. NPs in a wide range of practice settings and roles can provide strategic leadership with vision and purpose toward equitable access to care, documenting outcomes, measuring economic impact of NP care, and collecting the evidence needed to advocate for new models of care based on patient and population needs as they arise.

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The Nurse Practitioner Role and Practice in Jamaica

Heather McGrath

Introduction

The name Jamaica is derived from the Arawak word Xaymaca “land of wood and water” [1]. It is the largest English-speaking Island in the Caribbean and is situated 90 miles south of Cuba, 600 miles south of Florida and 100 miles south-west of Haiti. It is approximately 146 miles long, 51 miles wide with an area of 4,411 square miles [2].

There are approximately 3 million people living in Jamaica which consists of a multi-racial population of African, European, East Indian and Chinese descents. English is the main language, but the creole “Pattis” is spoken by most Jamaicans. There are two cities: Kingston located at the south-east border of the island and Montego Bay—the tourism mecca which lies at the north-west of the island. Jamaica is renowned for its warm climate, lovely white-sand beaches, popular reggae music, delicious meals and dominance in track and field [2].

There are thirteen parishes in Jamaica which are classified into three counties. In the health care system there are four Regional Health Authorities (RHAs) which are further subdivided into Parish Health Departments. Each Health Department is divided into Health Districts and consists of a number of Health Centres depending on the population of the community. There are three levels of care offered: primary (clinic), secondary (hospital) and tertiary (specialist hospital). Presently, public health care in Jamaica is offered free of cost.

Nurse Practitioners (NPs) have been an asset to the Jamaican Health Sector, especially in Primary Health Care, for over 40 years [1]. They deliver comprehensive quality care to the Jamaican populace across all life cycles. However, there is no regulatory framework in place and barriers to NP care remain.

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Historical Evolution of the NP Role, Regulation and Practice

After conceptualization of the role in 1972 and exploratory meetings in 1973, the Nurses Association of Jamaica (NAJ) submitted a proposal to the Minister of Health in 1974 for the commencement of training of Nurse Practitioners [3].

In July 1977, the first cohort of NP students, eighteen Family Nurse Practitioners (FNPs) and seven Paediatric Nurse Practitioners (PNPs), were admitted to a new programme in response to an acute shortage of Medical Doctors in the rural areas [4].

The training was offered at the Advanced Nursing Education Unit (ANEU) in Kingston and was introduced as a 1-year certificate programme [3]. The ANEU identified a programme coordinator, Dr Linnette Jackson Myers, who was a Registered Nurse before obtaining her degree in medicine. Project HOPE (Health Opportunities for People Everywhere), a non-profit international global humanitarian and health organization dedicated to assisting developing countries improve health, provided funding for books, audiovisual aids and salary for faculty members for the first 3 years [5]. In 1978 all the twenty-five Nurse Practitioners entered the workforce.

In 1980, the Minister of Health recommended that a legislation be enacted to provide legal coverage to NPs. It was proposed that, upon completion of their training, graduate NPs would carry out their functions as outlined by their training institutions. This included the categories of patients to be seen, drugs to be prescribed and the laboratory tests that could be ordered. This was formalized into a protocol in 1985. The physician community opined that the Nurse Practitioners were not adequately trained to assume this responsibility. Although NPs were well prepared to take on the role of Advanced Practice Nurses (APNs), the issue of not being able to prescribe independently proved to be a challenge [5].

In 1993, the NP education curriculum was revised by the NP Programme Coordinator, Dr Leila McWhinney-Dehane and the duration of training was increased to 18 months. A preceptorship system was introduced whereby NPs were required to spend the final 3 months of their training in the clinical area under the guidance of the supervisory NP or the most senior NP. A Medical Doctor provided oversight, while the supervisor ensured that the practice of the NPs was aligned with what they were taught. This revision included the introduction of the Mental Health/Psychiatry track in 1995. In 2000, the NP programme was upgraded to the master's level and was transferred to the University of the West Indies School of Nursing [5].

NP Education

At the inception of the NP role in Jamaica, the minimum entry requirements included Registered General Nurse, Registered Midwife, or acceptable substitute post-basic course certification and a 5-year post-registration practice. The major curriculum components were general subjects aimed at broadening skills in communication, social interaction, scientific problem solving, nursing and medical subjects. There was a 6-week core curriculum followed by a two-stranded specialist

curriculum of 18 weeks consisting of medical topics relevant to each subgroup. This period was followed by 6 months of internship. Subsequently, changes were made including increased paediatric content of the FNP course, re-organization of content, hours devoted to research/epidemiology, increased pharmacology content and modification of the student evaluations [6].

Currently, the entry requirements include 5 years post-Registered Nurse experience, undergraduate degree or graduate degree. The applicant is expected to submit a portfolio and attend an interview. This thirty-two-credit programme is offered at the master's level for 2 years at the University of the West Indies School of Nursing (UWISON), the only training institution in the Caribbean. Courses to be covered include three advanced nursing practicum seminars, pathophysiology for advanced nursing practice, growth and development, general and special pharmacology, psychopharmacology and research methods applied to nursing [3].

Scope of Practice

The scope of practice for NPs in Jamaica is delineated in the Advanced Practice Nurses Regulations under the Nurses and Midwives Act of 1964 [7]. The regulations specify that APNs act according to the recommended standards established by the Nursing Council of Jamaica (NCJ) on the recommendations of the Advanced Practice Nurse Standards Committee. The Nurses and Midwives Act will authorize Advanced Practice Nurses to independently act beyond the scope of practice of the Registered General Nurse. The Nurse Practitioners should possess advanced competencies and standards which are developed with their input and are reviewed regularly to ensure relevance and appropriateness of practice, assessment, diagnosis and management of clients based on up-to-date clinical data and best practices and engage in practices that reflect the ethical and legal principles of the profession of nursing. Medical certificates can be issued for a maximum of 7 days except in cases where the client illness is infectious, for example chickenpox. However, they are not permitted to issue certificates for police or court cases. They must refer the clients to the Medical Doctor if the signs or symptoms are life threatening, laboratory evidence of decreased function of a vital organ, and sexually transmitted disease in a child [7].

All new clients with a chronic non-communicable disease (NCD) should be seen by the Doctor but may be managed by the NP if so indicated by the physician. Clients should not be managed by an NP for three consecutive visits. NPs must meet medico-legal standards when writing prescriptions which include client's name and other identifiers, name of health facility, dosage, route, frequency and duration of drugs, instructions as to whether generic drugs may be substituted, directions for the number of refills, prescriber's name which should be clearly written, and include a legible signature and practicing number [7].

NPs should prescribe drugs approved by the Pharmacy Council and the vital, essential and necessary (VEN) list approved by the Ministry of Health and Wellness except cases in which the client was already placed on the drug with desired

outcomes and demonstrates the ability to afford the same, and where it is absolutely necessary and the situation is discussed with and approved by a physician. They do not have the authority to prescribe certain hormonal substances such as, growth hormones, anabolic steroids, infertility drugs and controlled substances. NPs are not permitted to prescribe drugs for themselves or their family members [7].

The laboratory tests that they can order include blood, urine, sputum, vaginal swabs, X-rays (such as chest, extremities and spine); ultrasound (such as neck, abdomen, pelvis and lower limbs), mammogram and electrocardiogram. NPs can perform minimally invasive procedures such as simple suturing, incision and drainage. Cosmetic treatments are not permitted [7].

Areas of Practice

Two groups of Nurse Practitioners are currently in practice, the Family Nurse Practitioner (FNP) and the Mental Health Psychiatric Nurse Practitioner (MHPNP). There are approximately sixty Nurse Practitioners practicing in Jamaica. The majority of the Nurse Practitioners work in the Primary Health Care setting; however one NP is employed in the hospital setting. The roles and practice of NPs are very diverse.

Family Nurse Practitioner

Nurse Practitioners provide a comprehensive range of services which are embedded in their professional, ethical and legal standards. In providing care they use their in-depth knowledge of the bio-psychosocial aspects of health and disease. They also apply basic and advanced principles of health management, health promotion and protection, and disease and injury prevention. They work under the clinical supervision of a physician as well as collaboratively with all members of the multidisciplinary health team [7].

The scope of practice for the Family Nurse Practitioner is based on approved core competencies. The population in primary care family practice includes newborns, infants, children, adolescents, adults, pregnant and postpartum women and older adults. They employ evidence-based clinical practice guidelines to guide screening activities, identify health promotion needs and provide anticipatory guidance and counselling addressing environmental, lifestyle and developmental issues [7].

The FNPs obtain and accurately document a relevant health history for patients of all ages and in all phases of the individual and family life cycle, perform and accurately document appropriate comprehensive physical examinations, assess specific family health needs within the context of community assessment, conduct home visits and implement appropriate interventions and follow-up. Clients who are not able to visit the health centre are seen in their homes.

They also order and interpret age, gender and condition-specific diagnostic tests and screening procedures, formulate comprehensive medical diagnoses/differential diagnoses, provide health promotion, and disease prevention interventions/treatment strategies to improve or maintain optimum health for all family members, prescribe appropriate selected pharmacologic and non-pharmacologic treatment modalities, make appropriate referrals to other health care professionals and community resources for individuals and families, assess and promote self-care in patients with disabilities and perform suturing, drainage of abscesses, splinting and pap tests [7].

Mental Health/Psychiatric Nurse Practitioner

Mental Health/Psychiatric Nurse Practitioners (MH/PNPs) are educated and trained to promote mental health. They assess, diagnose and manage persons with psychiatric and psychosocial issues under the clinical supervision of a psychiatrist. They offer comprehensive care to children, adolescents, adults and their families by performing specific psychological and psychiatric services. MH/PNPs collaborate with all members of the general health team and other agencies in the execution of their duties.

MHPNP Competencies

Identify and analyse factors that affect mental health such as genetics, family, environment, trauma, culture and ethnicity, spiritual beliefs and practices, physiological processes, coping skills, cognition, developmental stage, socioeconomic status, gender and substance abuse.

MHPNPs perform a comprehensive assessment of mental health needs of a community, accurately document mental status and neurological examinations, order appropriate laboratory tests, diagnose mental disorders utilizing standardized systems, evaluate potential abuse, neglect and risk of danger to self and others, such as suicide, homicide and other self-injurious behaviours, and assist patients and families in securing the least restrictive environment for ensuring safety. They also prescribe pharmacologic agents for patients with mental health problems and psychiatric disorders based on individual characteristics and manage psychiatric emergencies [7].

Nurse Educator

Nurse Practitioners are employed at the UWISON as undergraduate or postgraduate educators. There are three FNPs, two are lecturers in the NP Programme and also serve as co-investigators for research assignments for NPs and undergraduate nursing students. The NP educators are also required to conduct or collaborate with other faculty members to conduct research as outlined in their job descriptions. One NP educator serves on the NP Seminar Committee which is responsible to plan the national seminar for NPs where continuing education hours are facilitated. This forum also showcases research presentations by NPs (Table 1).

Table 1 Distribution of NPs in Jamaica

Facility	Number of NPs assigned
Secondary care (hospital)	1
Primary care (clinic)	55
University	3
Army	1

Prescribing

In Jamaica, the practice of Nurse Practitioners varies within and across the four Regional Health Authorities (RHAs). The discussions regarding legislation began in the 1980s. Ministers of Health have made promises to address this issue but have failed to see this to fruition.

In 2011, a recommendation was made for an amendment of the Nurses and Midwives Act of 1964. It was necessary to formulate the competencies, standards and scope of practice that would govern the practice of NPs. This document outlines and describes the requisite knowledge, clinical skills and professional judgement that the NP must exhibit in order to competently practice. The National Competency Framework describes the scope of activities that Nurse Practitioners are expected to perform within the health sector. This framework also provides a reference point for the designing of the educational curricula and a basis for evaluating their performance [7].

A working group that included members of the Nursing Council, Nurse Practitioners and Nurse Anaesthetists was established in 2014. The responsibility of the working group was to formulate the competence, scope of practice and standards for Advanced Practice Nurses (APN) in Jamaica using the International Council of Nurses (ICN) framework. Four [4] consultative meetings were held over a four [4] months period between September and December 2014. Members of the working group reviewed existing frameworks internationally that addressed the competencies and scope of practice for nurses in the public health system. A team met in 2016 and completed the review of the document. During the period 2016 to 2021, several attempts made to have this document finalized into protocol were unsuccessful [5].

In December 2021, a committee chaired by a Medical Doctor was formed by the Ministry of Health and Wellness to consider granting of prescriptive rights to Nurse Practitioners. The objective was to examine the training requirements including continuing medical education associated with nurse prescribing and to solicit the views of key stakeholders in relation to Nurse Practitioner registration. The committee was also tasked to complete a review of the competencies and scope of practice document that was previously drafted and completed in 2016. A focus group discussion with clients and Medical Doctors yielded positive results in support for the NPs legislation. Currently, the NPs perform their duties utilizing their Registered Nurse/Midwife licence. The proposed legislation by the members of the committee will allow NPs to prescribe an approved list of drugs aligned to their scope and competencies within the public health system [8].

Practice

In an effort to facilitate easy flow of patient care, some Nurse Practitioners are offered pre-signed prescriptions to carry out their duties. Prescribing practice is dependent on the location of the Nurse Practitioners (rural vs urban). In the urban areas, more doctors are employed; hence the issue of offering pre-signed prescriptions is of less importance. In this case, the prescriptions are signed by a physician after the clients are seen by the NPs. In some rural areas where Medical Doctor deployment is limited, NPs are expected to run clinics alone.

A Nurse Practitioner is assigned to one particular health centre within a health district or number of health centres. It is a common practice for some NPs to be assigned to five different clinics over a 5-day span. There are no guidelines on the number of clients to be seen per day. The number of clients seen is dependent on the assignment of the NP in relation to the population that the health centre serves.

The issue of prescribing is more critical in the case where the Medical Doctor who is assigned at a particular health centre is unable to present at the clinic, especially in more remote locations. If the NP assigned does not have an adequate number of pre-signed prescriptions, these clients are asked to return on another day to receive care. The reality is that some of these clients may not have the resources to return; hence timely access to care is impacted. Those clients who require urgent medical care are encouraged to travel long distances to receive care when the NP is unable to prescribe the necessary medications for the client.

In some instances, NPs triage clients. The two main categories of clients who visit the health centres are (1) those with chronic diseases who are in receipt of an appointment and (2) those who are unwell without an appointment. In some cases it is not possible to offer care to all clients. The triage process facilitates an assessment of the clients who do not have an appointment but who can be accommodated on that day. The triage also assists with assessing those clients who should be seen urgently.

Conducting health education sessions is the core responsibility of the NPs. These are done in the clinics or during outreach interventions in the community. Frequently, Nurse Practitioners are assigned to offer care inside clients' homes [9]. These clients have difficulty accessing care at the health centres due to transportation challenges and limitations in mobility. The NPs sometimes offer service alone. Clients in the infirmaries (government facilities that house individuals who are homeless) also benefit from this type of care. Completion of medical examinations for school admission and work is an independent role of the NP. In this case the Doctor's signature is not required.

To facilitate bi-annual re-licensure, NPs are required to obtain forty continuing education hours. This includes twenty-five nursing, ten midwifery and five non-nursing hours.

Leadership

Professional

With respect to leadership roles, Jamaican Nurse Practitioners are a group of health professionals that hold volunteerism within the profession and the country in high regard. Nurse Practitioners have served in leadership roles within the Nurses Association of Jamaica. Iris Wilson (FNP) served as president during 2000–2003 and Heather McGrath (FNP) was the third vice president from 2007–2008. The Jamaica Association of Nurse Practitioners was formed in 2009. Since its inception, four FNPs have served as presidents: Duet Less (2009–2012), Sherril Josephs-Williams (2012–2014), Nisa Hall (2014–2016) and Heather McGrath (2016–2022).

Dr Leila McWhinney-Dehaney (FNP) is presently the chair for the Nursing Council in Jamaica. Nurse Practitioners have also served as Chief Nursing Officer for the Ministry of Health and Wellness: Thelma Campbell (deceased) and Dr McWhinney-Dehaney. Heather McGrath joined the International Council of Nurses Nurse Practitioner/Advanced Practice Nursing (ICN NP/APN) Networking in 2017 as the Caribbean representative. She is presently the global Membership Officer. Heather McGrath commenced her role as editorial board member for the *Journal of the American Association of Nurse Practitioners* in January 2022.

Technical/Clinical

Nurse Practitioners are utilized to coordinate programmes within the Ministry of Health and Wellness. This includes non-communicable disease, HIV/STI, rheumatic fever, sickle cell and cervical cancer. The responsibilities include planning outreach interventions, formulating operational plans, conducting audits, drafting critical reports and assisting with policy frameworks.

NP Impact/Role During the COVID-19 Pandemic

Nurse Practitioners have been a vital arm of management during the COVID pandemic. They played a pivotal role in the roll-out of the vaccination programme. There were mass immunization campaigns where they were instrumental in observing the clients for adverse effects of the vaccine while others participated in the administration of the vaccine [10]. NPs were assigned to work in the emergency operations unit where they participated in the contact tracing process and assisted with obtaining samples from clients.

At the clinic level, NPs in five parishes are assigned to coordinate programmes such as non-communicable disease (NCD). These programme coordinators ensured that clients with NCDs had care facilitated in a timely manner. The opportunity of telemedicine provided access to care for clients who were fearful to visit the health centre. NPs also conducted health education sessions focusing on COVID-19 in the

communities. In an effort to facilitate continuing education hours, one NP organized webinars during commemorative events such as Diabetes Week. She also facilitated the sharing of best practices while participating in a research led by NPs in Canada that examined the role of the APN during the pandemic.

Conclusion

Nurse Practitioners have served as a vital arm of the Jamaican public health system for the past four decades. They offer quality care to clients across all life cycles. Many other countries internationally and regionally have demonstrated that NPs deliver comprehensive care safely. All stakeholders must act swiftly to ensure that the required legislative framework for NPs is enacted to assure the Jamaican populace has access to these qualified health care providers across all settings to facilitate Universal Health Coverage and access to care.

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The Evolution of the Nurse Practitioner Role and Practice in the United Kingdom

Melanie Rogers and Annabella Gloster

Introduction

This chapter discusses the evolution of the Nurse Practitioner (NP) role in the United Kingdom (UK) and the move to multi-professional advanced practice roles. In the UK, the provision of healthcare is a devolved responsibility for each of the four countries, England, Scotland, Wales and Northern Ireland. Each country has its own National Health Service (NHS). Specific country needs and policy have led to the development of NP roles, in addition to the development of other advanced practice roles for allied health professionals. This chapter provides an overview of the development of the NP role in the UK with specific reference to each country.

Evolution of the Nurse Practitioner Role in the United Kingdom

The nurse practitioner (NP) role was first recognised in the UK in 1988 [1]. Like other countries, typical drivers included medical provision shortages, a European edict to reduce the hours junior doctors worked, the changing needs of the population and a desire to advance nursing [2, 3]. In the UK, NP developments have led to holistic care which integrates the best of nursing with the best of medicine [4]. The UK does not view the NP role as a substitute doctor or a task-shifting role, rather a development of the nursing profession.

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There has been a slow evolution of the NP role in the UK with local service needs often driving sporadic NP role development rather than a national policy. However, the role is now well accepted and well established. The NP role was pioneered through the work of Barbara Stillwell and Barbara Burke-Masters who introduced the role into primary healthcare in the late 1980s [5]. The NP was viewed to be a role suitable for experienced nurses who could enhance patient care through the development of health assessment and diagnostic skills to deliver independent patient management in primary care. The development of NPs in secondary care settings did not develop fully in the UK until the 2000s.

Nurse Practitioner Education

Education for NPs was pioneered in the 1970 but really began to evolve in the early 1990s when the Royal College of Nursing (RCN) established the first training programme for NPs in the UK in conjunction with the University of London. The RCN is the UK's largest nursing membership organisation and trade union [6].

The RCN programme of study was initially taught at diploma level and integrated the key competencies of physical health assessment, differential diagnoses, patient management skills underpinned by a robust knowledge of anatomy and pathophysiology. The curriculum, which was a work-based modular approach was franchised, making the programme available to other education institutions on a commercial basis which later developed into an RCN accreditation system. The benefit of providing an RCN accredited programme was the consistency of the training which was benchmarked to nationally agreed standards [7]. The move to franchise the London programme allowed other universities to deliver the RCN accredited programmes which still exist today at masters level.

Other universities soon followed the RCN lead and began to offer NP training; however there was no standardised approach in course content, with NP roles varying in scope of practice, educational preparation and titles used [8]. Training progressed from diploma to degree level training and is now offered solely at master's level across the UK. There are no concrete plans in the UK to develop a Doctor of Nurse Practitioner curriculum. However, some universities offer professional doctorates in advanced practice which enables NPs to pursue a specific clinical topic to doctorate level in addition to traditional PhDs.

In 2008 a UK-wide proposal to support NP training was published called "The Advanced Practice Toolkit" [9]. This document outlined four pillars of advanced practice; clinical practice, leadership, education and research. In England, the Department of Health developed a position paper [10] which proposed four themes under which nurses working at an advanced level would be required to have competencies in following a structured curriculum at master's level:

- Clinical/direct care or practice
- Leadership and collaborative practice
- Improving the quality and developing practice

- The development of self and others

The four pillars outlined within the Scottish toolkit have since been accepted in all four UK countries as the basis for NP and advanced practice training [9]. Competencies within the four pillars serve as the foundation for educational preparation and work-based learning.

Due to the ongoing lack of regulation and title protection, the RCN published guidance for NPs suggesting that those working at an advanced level of practice having achieved the educational and practice competencies use the title Advanced Nurse Practitioner to identify the “advanced” nature of the role [7]. The title change was anticipated to bring greater clarity to the role, yet a 2017 study found 595 job titles in the UK which were being used by 17,960 specialists which could be perceived as being advanced [11]. This finding has led to further developments across the UK to try to standardise advanced practice by educators, researchers, clinicians, policy makers and regulators through the development of country-specific frameworks in the UK.

Considering the lack of regulation in the UK for advanced practice it is interesting to note that many “Royal Colleges,” where medical colleagues are credentialed, have developed their own curricula and capabilities for advanced practice, for example, the Royal College of Emergency Medicine, the Faculty of Intensive Care Medicine and the Royal College of Surgeons for which advanced clinical practitioner,s (ACPs) from all professions can apply. These colleges offer membership (for a fee) and opportunity to receive credentialing for their role. Some view this to be a reductionist approach for advanced practitioners within a bio-medical model rather than advancing the nursing profession, whilst others embrace the speciality framework/curriculum to define their scope of practice. Leary & MacLaine [12] suggested this could support a view that advanced practice roles are merely medical substitute roles.

Nurse Practitioner Prescribing

A pilot of nurse prescribing took place in the UK during 1994–1997 with a national roll-out following from 1997–2001. Initially prescribing was limited to District Nurses and Health Visitors who had a very limited formulary of mainly wound care products and a few other medications such as Nystatin for infant thrush [13]. Several other initiatives followed including extended prescribing from 2001–2009, supplementary prescribing from 2003 and limited independent prescribing in 2006 [14, 15]. Supplementary prescribing allows the prescriber to develop a clinical management plan with the patient and their doctor. The doctor initiates the mediation needed and the prescriber can then continue ongoing prescriptions within the stipulated management plan. This approach works well for long-term conditions for example [16].

Independent prescribing, initially only available to registered nurses and pharmacists, allowed a limited number of medications to be prescribed autonomously.

Over time, the list has been extended to now include all medications within the British National Formulary including controlled drugs if prescribing is within the clinicians' competencies. With the move in many parts of the UK towards developing the multi-professional workforce many other professions are also able to undertake independent prescribing, for example: podiatrists, physiotherapists, radiographers, paramedics and optometrists [17].

Nurse Practitioner training in the main includes prescribing as a compulsory module in the UK.

Nurse Practitioner Regulation

Alongside the NP role developing in the UK there has also been a plethora of other advanced practice roles developing. This has caused a major issue in terms of the nomenclature [11]. Unfortunately, there has been repeated failures to regulate or protect the NP title in the UK. Over the last two decades the NP role was acknowledged as a discrete role which prompted consultation within the nursing profession and its governing body. In 2005 the Nursing and Midwifery Council (NMC), the regulatory body of all UK nurses, considered regulation of NPs; however, a later review by the Council for Healthcare Regulatory Excellence (CHRE) stated that all registered healthcare professionals must comply with standards set by their own professional bodies and therefore separate regulation was not required for NPs [18]. They suggested that advanced practice does not need additional regulation because career development, that includes advanced practice, is appropriately governed through their own professional bodies via codes of conduct. The CHRE suggested that employers have a responsibility to ensure their healthcare workforce meets the standards set by their professional body for practice and therefore the NP must meet their individual professional code of conduct. Governance to date is employer-led with the aim of ensuring quality and appropriate standards are maintained to minimise the risk to patients and protect the public.

To date there is no separate regulation for NPs or the multi-professional advanced practitioners by their separate regulatory bodies and there are no requirements for re-validation. Governance is still employer-led with the aim of ensuring quality and appropriate standards have been met to protect the public and reduce risk to patients. The Nursing and Midwifery Council is currently reviewing the regulation of NP roles due to the multiple concerns regarding a lack of regulation with a recent Council paper stating it is looking to approve new standards for advanced nursing practice by 2025 [19].

Health Policy

Increasing life expectancy, the subsequent disease burden as well as European policy and legislation resulting in a reduction in availability of junior medical staff led to a rise in the development of the NP and advanced practice roles in the UK to fill

the gap [20–22]. The application of advanced practice roles has enabled more effective use of skilled human resources in targeted areas of growth need, for example, mental health, urgent and emergency care, and other speciality areas requiring service transformation.

Implementing advanced practice roles has required changes to policy in the governance and regulation of professions, as well as the development of financial and organisational support. Policy reforms around advanced practice in the UK have been shaped by stakeholders including employers and clinicians and often the medical profession. Healthcare managers have been instrumental in supporting training and implementation of these roles [8]. The advanced practice role has now grown to include other professions and has begun to influence workforce structures and service redesign with innovations in healthcare services that are now entirely advanced practice-led.

England

The NP role in England is attributable to the pioneering work of Barbara Stillwell who introduced the role in the late 1980s into primary healthcare. The emergence of NP roles into secondary care occurred much later and largely mirrored the emphasis on clinical assessment, diagnosis and treatment as seen in the United States of America [8]. Educational preparation was developed and led by the RCN as described earlier, however soon expanded with other education providers developing and delivering their own programmes. This has contributed to the lack of standards required to underpin this role. The title and educational preparation have varied ever since inception of the role. As it has often been at an employer level, it has resulted in a plethora of job titles and an inconsistent underpinning evidence base in comparison to countries where NP is regulated and firmly established.

Following the publication of *The Scope of Professional Practice* by the United Kingdom Central Council for Nursing, Midwifery and Health Visiting, nurses were liberated to take on roles that were previously in the domain of medicine and were encouraged to make decisions much more independently [23]. The parallel development of the NP role and advancing nursing practice may have contributed to the confusion and distinction between nurses who took on extended roles and advanced practice.

As advanced nursing practice moved into the twenty-first century, the breadth of roles and titles continued to develop with a current picture of many roles, titles and job descriptions related to Clinical Nurse Specialist, NP and other advanced practitioner titles. The move to recognise advanced practice as a level of practice rather than a specific role has moved advanced practice towards a multi-professional approach with the use of the title advanced clinical practitioner, (ACP) in England [24] and Advanced Practitioner in the other three countries.

Health Education England (HEE) is a government body which supports the delivery of healthcare to the patients and public of England by providing leadership and coordination for all healthcare training and education in England. HEE has

contributed to the development of a multi-professional approach for advanced practice including nurses, midwives, allied health professionals and pharmacists. HEE published a multi-professional framework for advanced clinical practice in England [24]. This framework reflects a philosophical view of a level of practice with room for all health professionals to develop an advanced scope of practice developed by master's level education [24].

The HEE multi-professional framework has been a driving force towards the establishment of the HEE Centre for Advancing Practice and seven Regional Faculties for Advancing Practice in each of the English regions. The Centre for Advancing Practice oversees workforce transformation of advanced level practice, by the establishment and monitoring of standards for education and training, accrediting advanced practice programmes and recognising education and training equivalence through the assessment of a portfolio. The accreditation and recognition of meeting the standards for education and training at present is not mandatory for education providers or practitioners, but the aim of all these developments in England is for advanced practice standardisation, title protection and regulation, which will ensure public safety and the advancement of all professions [24].

The regional faculties are working across their local systems to support transformation in practice, as they are uniquely placed to understand their own region's workforce requirements. Each faculty will identify workforce demand, commission high-quality education and training, support communities of practice to drive ongoing development and support to improve patient care through the development of advanced practice.

Recent developments in England saw the introduction of an apprenticeship model for the educational preparation for ACPs. The MSc ACP is defined by an apprenticeship standard that defines an occupational role and sets out the knowledge, skills and behaviours required to fulfil it across four domains. The standard was developed in collaboration with multiple stakeholders including, employers, HEE and the Association of Advanced Practice Educators UK (AAPE UK).

The model is employer-led and requires a minimum of 20% off the job learning, enabling clinicians to study whilst practising and contributing to service delivery. It allows the employers to access funding for the development of ACPs through a government levy which they pay into if they have an annual pay bill of more than £3 million.

The current English definition for advanced clinical practice is:

Advanced clinical practice is delivered by experienced, registered health and care practitioners. It is a level of practice characterised by a high degree of autonomy and complex decision-making. This is underpinned by a master's level award or equivalent that encompasses the four pillars of clinical practice, leadership and management, education and research, with demonstration of core capabilities and area specific clinical competence.

Advanced clinical practice embodies the ability to manage clinical care in partnership with individuals, families and carers. It includes the analysis and synthesis of complex problems across a range of settings, enabling innovative solutions to enhance people's experience and improve outcomes [24: p. 8]

Scotland

Scotland initially recognised advanced level practice to only be in the remit of nurses and utilised the same title as England: ANP. NHS Education for Scotland [25, 26] developed an advanced practice toolkit which has been widely used across the whole of UK to provide resources to support the development of advanced practice education and training.

The Scottish governments' transforming roles programme was introduced in 2015 to ensure strategic oversight and governance of role developments that were beyond traditional boundaries. The Scottish government committed to funding 500 additional ANPs as part of this programme with a prerequisite to include evaluation of the impact of this investment. The current phase of the transforming roles programme is to support the development of allied health professions and healthcare scientists to become advanced practitioners [27, 28]. The transformation programme is currently being evaluated and will focus on educational impact.

There are three Advanced Practice Academies within Scotland covering the north, west and east of Scotland. These Academies were established to support governance and professional development for ANPs and Clinical Nurse Specialists and are a collaboration of education institutions and Regional Health Boards [29]. The academies have a multidisciplinary membership including NHS board members, nurses, midwives and allied health professions as well as academic representatives which facilitate shared learning across professions. The Academies are now working towards a multi-professional approach to the Advanced Practice roles. Recently pharmacists have joined the membership of each Regional Board [29]. Each Regional Board has responsibility for maintaining a data base of registered advanced practitioners and providing professional development. The three Academies meet regularly to ensure a collaborative approach across Scotland.

Additionally, a new initiative of Advanced Practice Educators has recently been formed in Scotland to develop Advanced Practice Education called the Scottish Advanced Practice Educators Network. This follows the successful inception of a Welsh Educator Network (see below).

The Scottish government [28] continues to support the development of Advanced Nurse Practitioners (in addition to other Advanced Practitioner roles) through policy that supports safe, effective and person-centred care.

The current Scottish ANP Definition is:

Advanced Nurse Practitioners (ANPs) are experienced and highly educated registered nurses who manage the complete care of their patients, not focusing solely on any condition. ANPs have advanced level capability across the four pillars of practice: clinical practice, facilitation of learning, leadership, evidence, research and development. They also have additional clinical-practice skills appropriate to their role [30].

Wales

Wales followed in the footsteps of Scotland in 2009 by adopting the Scottish Government Health Department's Advanced Practice Toolkit [25]. The Post Registration Career Framework for Nurses in Wales [33] offered the initial foundation for the development of an Advanced Practice Framework. The Advanced Practice Framework sets out guidance and key messages about a consistent, structured approach for the development of "advanced practitioners" across clinical, education, management and leadership roles. Advanced practitioners in Wales are expected to integrate all of the four pillars of advanced practice into their roles.

Health Education and Improvement [32] is responsible for supporting Advanced Practice in Wales. Their Advanced Practice Framework has been perceived as key to the workforce redesign and supporting robust Advanced Practice governance. Development of Advanced Practice roles in Wales has increased dramatically since 2010 with targeted funding for Advanced Practice increasing year on year [32]. The Advanced Practice Framework for Advanced Practice offers clear guidance for the development implementation and evaluation of Advanced Practice roles throughout Wales.

Advanced Practice is defined within the Welsh Framework as:

A role, requiring a registered practitioner to have acquired an expert knowledge base, complex decision-making skills and clinical competencies for expanded scope of practice, the characteristics of which are shaped by the context in which the individual practices. Demonstrable, relevant Master's level education is recommended for entry level. ([32], p. 21)

It also states that:

Advanced practice should be viewed as a 'level of practice' rather than a specific role and it is not exclusively characterised by the clinical domain but may also include those working in research, education, management/ leadership roles. ([32], p. 10)

Current developments in Wales have seen the successful inception of an Advanced Practice group of Educators forming a committee to drive Advanced Practice forward (Wales Advanced Practice Educators Network) alongside the creation of the Multi-Professional Advanced Practice Group Wales.

Northern Ireland

Northern Ireland uses the title Advanced Practitioner. Nursing and allied health professionals have separate advanced practice frameworks set out in the Advanced Nursing Practice Framework [34, 35] and the Advanced Allied Health Professional Practice Framework [33]. Each framework identifies the core competencies for the role of the Advanced Practitioner and like all the UK countries the four pillars of advanced practice are essential to these roles. Both frameworks acknowledge that, in Northern Ireland, there has been a lack of understanding regarding the precise

nature of the Advanced Practitioner and confusion between that and the role of the specialist practitioner. The frameworks document the fundamental differences between the specialist and advanced practice roles and define what advanced practice is, allowing for formal educational and clinical practice progression for each.

Definitions

An Advanced Nurse Practitioner in Northern Ireland:

practices autonomously within his/her expanded scope of clinical practice, guided by The Code. Professional standards of practice and behaviour for nurses and midwives The Advanced Nurse Practitioner demonstrates highly developed assessment, diagnostic, analytical and clinical judgement skills and the components of this level of practice [35: p. 4].

The Allied Health Practitioner advanced practice role is defined as:

a role, requiring a registered experienced practitioner to have acquired an expert knowledge base, complex decision-making skills and clinical competences for expanded/extended scope of practice, the characteristics of which are shaped by the context in which the individual practices. Demonstrable, relevant education is recommended for entry level to the advanced practice role which is to be at master's level or equivalent and which meets the education, training and Continuous Professional Development (CPD) requirements [33].

Examples of Practice from the UK

Primary Care

Gemma is a 29-year-old Advanced Nurse Practitioner working in primary care. She undertook her master's degree 3 years ago. Her day-to-day work involves all the four pillars of practice.

Clinical Practice

She runs two clinics each day. Each clinic lasts for two and half to three hours. Patients are allocated a 15-minute appointment. Gemma sees "all comings." In terms of her clinical work, she is only excluded from assessing pregnancy related issues, for example listening for foetal heart sounds. Her clinic is varied including acute and chronic presentations. Her most recent clinic included the following presentations: child with sore throat—Scarlatina, adult in their twenties with depression, 50-year-old woman with a hard breast lump, 78-year-old man with end stage chronic obstructive airways disease, 20-year-old man with penile discharge, 40-year-old man with cough, fever and malaise—tuberculosis, 50-year-old woman with perimenopausal symptoms, 58-year-old man with unexplained anaemia. Gemma enjoys the variety of presentations. Although she works autonomously, she meets with her medical colleagues for lunch where they have the opportunity to

discuss difficult cases and have time for informal training together. Once a month she has direct clinical supervision with a general practitioner.

Leadership and Management

Gemma is the nurse lead for the practice which involves supporting and developing a team of six colleagues. She works as role model by consistently demonstrating her holistic approach to person-centred care and compassionate leadership. Her vision is to encourage and support her team to offer the best care possible. She meets weekly with the team to listen to any concerns and offer supervision and informal training as needed.

In addition to managing the nursing team she is the practice lead for long-term conditions. She has worked hard to redesign services and provision in response to patient and staff feedback. She set up a monthly patient participation group where she discusses service redesign and involves the patients in co-production of services. Her work has been recognised locally and she often speaks to other primary care providers about her leadership work with patients.

Education

Gemma integrates the education pillar in a number of ways, clinically with her patients, with her colleagues and through her own professional development. Clinically, she is passionate about empowering her patient to have the knowledge to be able to make informed choices. She works hard to ensure health literacy to maximise patients' health and wellbeing. Recently, she has been involved with colleagues at a local university, which teaches Advanced Nurse Practitioners, to develop a series of online modules which includes evidence-based approaches to women's health as well as patient vignettes to support learning.

In terms of her own personal development Gemma accesses training and development in her locality through a monthly professional development afternoon which is run by a collaboration of primary care providers. She often is asked to present at these events. She attends one or two conferences per year to increase her own knowledge in specific areas and network with colleagues. Finally, she usually accesses monthly professional updates either face to face or online to ensure she continues to keep herself up to date.

Research

When Gemma completed her training, she viewed herself as naïve about research methods and methodologies. To upskill herself she undertook a module at her local university which gave her more confidence in how she could integrate research in her own clinical area. Weekly she works with colleagues in the audit group to look at specific areas of practice which may need to be improved upon. She reviews national guidance and presents audit findings and updates to guidelines at the clinical meetings that are held weekly at her practice. Recently, Gemma was asked if she wanted to be involved in a research study looking at antibiotic prescribing during Covid-19. Initially, she didn't feel she had the confidence to be involved in a study. After talking with colleagues she felt encouraged to become involved in the research

team. She felt supported by the rest of the team and realised how enjoyable research could be. She was able to take the findings and discuss implications for practice with her colleagues at the practice. These experiences have given her a new appreciation for the importance of research in clinical practice.

Secondary Care

Mo is a 42-year-old Advanced Nurse Practitioner working in the Emergency Department (ED). He undertook his master's degree 10 years ago. His work involves all of the four pillars of practice and covers both day and night shifts across the 24-hour service.

Clinical Practice

Clinically he sees all patients that may present to the ED. A medical consultant-led safety huddle occurs at the handover of a shift to ensure responsibility for immediate and ongoing care is transferred between healthcare clinicians. Patient presentations include anyone who comes into the department either self-presenting or brought in by ambulance. His most recent shift included the following presentations: 56-year-old with chest pain—myocardial infarction, 84-year-old after a fall—fractured neck of femur, 42-year-old with abdominal pain, vomiting and jaundice, 35-year-old with a major trauma—pedestrian hit by vehicle—multiple fractures to lower limbs and head injury and the care of a dying 94-year-old patient.

Mo enjoys the variety and unpredictability of the presentations in the ED, working within a multi-professional team and learning continuously from his medical colleagues and the wider multi-professional team. Although he works autonomously, he has the opportunity to discuss difficult cases with senior medical colleagues and has time for formal training together with other NPs.

Leadership and Management

Mo is one of two lead NPs in the ED which has a developing team of 14 multi-professional ACPs. He meets with the team of ACPs on a monthly basis and approaches his role with compassionate leadership recognising the signs of staff burnout in this field checking on the wider nursing team, but also supporting junior ACPs and trainees as they develop. He meets with the senior medical team on a weekly basis and is able to advocate for, and ensure, all ACPs are supported and supervised and that their voice is heard in decisions made relating to the team, ways of working and the vision for the future for the ED team.

Mo has led multiple audits and pieces of work related to service improvement which he shared nationally at conferences, and supported ACPs informally from other hospitals who may be working alone but wanting to develop and grow more NPs as part of their workforce. He is an advocate and active member of ED advanced practice forums at a regional level.

Education

On-the-job clinical teaching is core for professional development, and Mo has opportunities daily for his own development but also to develop others. He is a role model to others, motivating others to learn through active participation and to provide meaningful opportunities for developing the other team members' skills and knowledge. He empowers patients to have the knowledge to be able to make informed choices and using appropriate opportunities to integrate health promotion and providing lifestyle education.

In terms of his own personal development Mo has formal teaching sessions in the ED on a weekly basis often with medical colleagues. The sessions involve discussion of complex cases, new evidence and/or the management of particular presentations, audit findings and root cause analysis of particular incidents. He is often asked to present a case with the expectation to be able to justify his clinical reasoning and to explore the evidence base to support his management for peer learning.

Research

Mo has been involved in multiple clinical audits, and as part of a larger research team when the department has been involved in major clinical trials. Presenting findings from clinical audit to the wider team can improve compliance in areas where guidelines have not been used consistently or where safety issues have been identified and need prompt action with a change in practice.

Mo uses the opportunity to revisit previous cases to learn from and to have time to think more deeply, reflecting on his clinical reasoning and exploring opportunities to research best practice and guidelines related to these cases, and to consider any areas for improvement that could be made either personally or more widely in terms of changing practice within the department. The importance of research in clinical practice is recognised and integrated into everyday practice using best available evidence and from his professional development both formally and informally.

Conclusion

In 2022 Advanced Practice roles in the UK are mainly viewed as a level of practice rather than an individual specific role. Key to this is the assimilation of the four pillars of advanced practice where clinical work, education, research and leadership are all viewed as important when working at an advanced level.

As with many countries grappling with workforce transformation there are many challenges the UK faces. The UK comprises of four countries who have devolved governments and specific service needs leading to varied approaches to advanced practice. In relationship to nursing the UK still does not have standardised regulation or title protection although there is progress in this area. Advanced Practice Nurses continue to offer diverse roles and transferability of skills which have made a significant difference to workforce transformation and fundamentally to patient care.

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The NP Role and Practice in Finland

Anna Suutarla, Virpi Sulosaari, and Johanna Heikkilä

Fact Box—Health in Finland

Finland is situated in Northern Europe and is one of the Nordic welfare states. The public sector has a duty to take care of the health and well-being of Finland's population of approximately 5.6 million. According to the Constitution of Finland (1999/731), the public authorities guarantee adequate social, health, and medical services for everyone. Thus, public sector is the organizer and primary producer of the health and social services, and the services are mainly financed by the state. Public health and social services are either free of charge for clients, or there is a reasonable client charge. However, an upper limit for the charges per calendar year exists, and clients don't have to pay beyond that. Public services are supplemented by the private sector actors and the third sector. Furthermore, employers need to arrange preventive occupational health care of their employees, some provide also medical care. Private health care services are mostly financed by the patients themselves or through their insurances. Public service providers may also purchase services from the private providers [1, 2]. In 2020, most of the Registered Nurses (RNs) in Finland worked in public services and were employed by the

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municipalities (83%), while others worked in private services (15%) or as entrepreneurs (0.85%) (Finnish Nurses Association).

Finland has several success stories in public health and has world-class results in many areas. Despite this, severe challenges remain, including unequal access to care and inequalities in life expectancy by gender and socioeconomic status. In 2019, almost 5% of the Finnish population reported unmet medical care needs due to financial reasons, geographical barriers, or waiting times. As in many countries, the density of physicians is much greater in the major cities, compared to remote and sparsely populated regions, thus reinforcing disparities in access to care [3]. Expanded and advanced practice roles in nursing have been one solution to cope with the shortage of the physicians. These include, e.g., RNs' consultations and appointments for acute and chronic health conditions in primary and specialized health care settings [4]. As the Finnish population is aging and there are high numbers of people with noncommunicable diseases (NCDs) and disabilities, the demand for health and long-term care systems will rise [3, 5]. At the same time, the birth rate is falling, and the working-age population is declining. This will cause a decrease in tax revenue which is the main source to fund the public health services [3].

A major reform for organizing public health care, social welfare, and rescue services took place from the beginning of 2023 as the services were transferred from municipalities and joint municipal authorities ($n = 309$) to self-governing well-being services counties (total of 21 counties and the City of Helsinki and the Hospital District of Helsinki and Uusimaa). This change in service provision arrangements aims to reduce inequalities, improve the quality and availability of services, and contain expenditure growth. The services are locally accessible, and in addition to health centers and other health service units, online services, mobile services, and services provided at home are available. Health promotion and disease prevention remain as the cornerstones of the services [2].

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Background

The level of autonomous practice is traditionally high among Registered Nurses (RNs) in Finland, particularly in primary care, perhaps more so than in many other countries. RNs' (including public health nurses and midwives) independent appointments are a well-established part of both the primary health care [1, 2] and specialized health care services [2]. However, further education, scope of practice, work description, and the titles of the RNs working in these positions vary by organizations and units [2]. In primary health centers, RNs are in many cases the first and often also the only points of contact for the patients. In 2019, for patients who came to the nurses' primary health care outpatient acute care appointment, in almost half of the cases the RN was able to provide care to the patient without the need to consult the physician at all. In 28% of the cases the RN consulted the physician and in 22% of the cases the RN referred the patient to the physician office during the same day [1]. This data counted all the RNs working in these primary health care services, not only Nurse Practitioner professionals. In 2021 out of the primary health care RN/physician outpatient visits, 51% of the visits were cared for by RNs, and 49% by physicians [3].

One example of primary care autonomous practice in Finland is Public Health Nurses (worth 240 ECTS¹ credits education, bachelor's degree, EQF² level 6). They have an autonomous role, e.g., in maternity and child health centers, in school health and occupational health services, and an autonomous practice and roles in, e.g., health check-ups, health promotion, advice in health problems, and vaccinations [4]. Midwives (worth 270 ECTS credits education, bachelor's degree, EQF level 6) have a significant autonomous role, e.g., in childbirth care.

Compared to the other WHO European region countries, Finland is among the countries having the highest proportion of RNs in relation to the population. On the other hand, the proportion of physicians is lower than the WHO European region average [5]. In a comparison of the Organization for Economic Co-operation and Development (OECD) countries, Finland is ranked among the first ones in terms of how many RNs there are in relation to physicians [6]. Keeping this in mind, one can well state that Finnish health and social services rely heavily on the extensive role of the nursing workforce.

In 2020, there were 75,299 RNs in the workforce, including midwives, public health nurses, and paramedic nurses (Finnish Nurses Association). The clinical career pathway from a Registered Nurse to Advanced Practice Nurse has been described, but not fully implemented [7]. Advanced Practice Nursing (APN) roles

¹The acronym ECTS means European Credit Transfer System (also known as the European Credit Transfer and Accumulation System). In Finland, one ECTS credit is 27 hours of student's work. 60 ECTS credits are the equivalent of a full year of study or work.

²The acronym EQF means European Qualification Framework. It includes eight reference levels describing what a learner knows, understands, and is able to do (learning outcomes). Bachelor's level degree (Registered Nurse education) is at EQF 6 level, Master's level degree at EQF level 7, and Doctoral degree at EQF level 8.

emerged around 2000, and the first Nurse Practitioner (NP) programs were initiated in 2006 [8]. Legislation allowing nurse prescribing was initiated in 2010 [9]. Finland has been ranked among the top OECD and EU countries with established NPs in primary care (Maier et al. 2017), implying that Finnish NPs work at high levels of advanced clinical practice, extensive task-shifting has occurred, and it is combined with regulatory reforms leading to a considerably expanded practice level [10].

In 2016, the Finnish Nurses Association's group of experts published a report describing the current Advanced Practice Nursing (APN) state in Finland. The report also gave a vision and recommendations for the future, introducing a model for the clinical career path in nursing which included the roles of Registered Nurse, Specialist Nurse, and Advanced Practice Nurse (covering separately the roles of Nurse Practitioner and Clinical Nurse Specialist(CNS)) [11]. In 2021 the APN expert group was again convened to evaluate the current state and to further clarify and implement the APN roles, and these efforts are ongoing.

Nursing Education in Finland

The Finnish higher education system has a dual model and comprises Universities as well as Universities of Applied Sciences (UASs), both having a distinctive own role. Universities engage both in education and in research and have the right to award doctorates. UASs are multi-field institutions of professional higher education. UASs engage in applied research and development. Higher education is tuition free in Finland [12].

Nursing education takes place at UAS. The entry degree is a bachelor's level degree on EQF level 6, worth 210 ECTS and takes 3.5 years. Nurse education in Finland complies the European Union's Directive 2005/36/EC, amended by Directive 2013/55/EU [13]. Therefore, the requirements in Finland are similar to those elsewhere in the European Union and other collaborating European countries. Other bachelor's level (EQF level 6) nursing degrees are Public Health Nurse (worth 240 ECTS, 4 years), Paramedic Nurse (worth 240 ECTS, 4 years), and Midwife (worth 270 ECTS, 4.5 years).

After bachelor's degree education RNs have options to continue to take a master's degree education either at UAS (90 ECTS) or university (120 ECTS), as well as a doctoral degree at the university. There are five universities offering master's and doctoral degree studies in nursing science. Eleven UASs offer master's level education in clinical nursing. Also, specialist nurse education is available (most often 30 ECTS); however, this education does not award a degree.

Regulation

Based on the Act on Health Care Professionals (559/1994) [9], RNs in Finland need to apply for licensing from the central government agency, the Finnish National Supervisory Authority for Welfare and Health (Valvira), which keeps the register of health care personnel. Licensing and registration is granted to three categories of

bachelor's level (EQF level 6) nurses: general nurses (RNs), public health nurses, and midwives. Under Finnish law, licensing is granted altogether to 17 health care professions. The practice of these professions is restricted to licensed professionals only. In addition, nurse's limited right to prescribe (EQF level 7) is regulated in the legislation, and Valvira registers the specific qualification and grants the limited right to prescribe [9]. A requirement for the limited right to prescribe medicines is a written assignment given by the physician in charge at the health center where the nurse is employed. The right to prescribe is always connected to the place of employment. The government has subsidized nurse prescriber education since 2019 [14]. No other RNs' specialized or advanced roles are registered by Valvira, including the NP and CNS.

Even though the Nurse Practitioner (NP) role is recognized in the Finnish health services there are no official nation-wide regulation or titles, which is one of the primary challenges for the NP role development in Finland. For NP job descriptions there are a variety of titles. The Finnish Nurses Association recommends the use of the Finnish title ("asiantuntijasairaanhoidaja") [11], but in reality, this title might be awarded to RNs with varying education and job descriptions.

The nurse prescriber education was launched in 2011 in accordance with government degree [15]. The development of the national curriculum, which ensures uniform implementation, was conducted in coordination with the Ministry of Social Affairs and Health.

Based on the law [9] only physicians and dentists can decide on the medical examination, diagnosis, and appropriate medical treatment of a patient. In accordance with his or her education, work experience and job description, a licensed health care professional (including RNs) can start the treatment of a patient based on the patient's symptoms, the information available and the patient's need for treatment as assessed by the professional. Therefore, nurse prescribers don't make diagnosis, but base their prescriptions and treatment on symptom assessment. In the case of continued medication, a physician has made the diagnosis earlier [9].

However, the Finnish Health Care Professionals Act [9] does not otherwise describe in detail the tasks that are under the responsibility of physicians, RNs or other health care professionals. In fact, the act is quite broad in its nature as it states:

A licensed or authorised professional or a professional with a protected occupational title is entitled to practise the profession in question and to use the related occupational title. ... This provision notwithstanding, licensed and authorised professionals and those with a protected occupational title may however carry out each other's tasks, in accordance with their training, experience and professional skills and knowledge, when this is reasonable with regard to the organisation of work and supply of health services, unless otherwise prescribed in this Act or by decree.

In one viewpoint, this kind of broad letter of the law gives flexibility to organizing the services patients need, enables the development of an appropriate division of duties between the health care professionals, and offers RNs clinical career prospects. On the other hand, especially if implemented in an uncontrolled manner, task-shifting, or a new division of duties does not necessarily officially recognize

the RNs' increasing and more demanding work description and responsibility. Gradually, the RNs' work description may sometimes grow more demanding without adequate further official or degree education, recognition, title, or the wage according to the demands of the work. This might be one hindrance in developing the licensed Advanced Practice Nursing roles.

Regarding the division of the duties, the employer is responsible for evaluating and ensuring that the personnel have the education, professional qualifications, experience and skills required, and that all the legal and other requirements are met. Also, the health care professional needs to maintain and evaluate own professional skills and inform the employer if they are not sufficient for the changing and new tasks [16]. The Finnish Nurses Association states that the development of the division of duties between the social and health care professionals must be controlled. With respect to both patient safety and the legal protection of health care professionals, sufficient continuing education and opportunities to consult other professionals must be ensured. Wages must also be proportional to the demands of the work [11].

Advanced Practice Nursing in Finland

The characteristics of the Advanced Practice Nursing (APN) in Finland are shaped by the education system and legislation on education, regulation, and practice. The two APN roles, Nurse Practitioner (NP) and Clinical Nurse Specialist (CNS), are recognized in the Finnish social and health care services, although neither of the roles is registered or regulated.

Nurse Practitioner

Nurse Practitioner (NP) education takes place in the Universities of Applied Sciences (UASs). However, the contents of the degree programs still vary. The first university-based Nurse Practitioner master's education program has just started (Åbo Akademi).

The UAS Master's Degree in Health Care, including the Advanced Practice Nursing degree program, is a 2-year education worth 90 ECTS credits. A requirement of 2 years clinical experience is an entry requirement. Most master's degree students study part-time while working, often in clinical practice. In principle, one can continue to university for doctoral studies after taking a master's degree education at UAS. However, some departments of nursing science may require so-called bridging studies or research methodology prior to applying to the doctoral programs.

The UASs have autonomy in their curriculum development as the NP role is not licensed and therefore regulations on education do not exist. As a result, there have been great differences among the programs during the more than 10 years of implementation of the NP role. As guided by the International Council of Nurses, ICN [17], core competencies and master's level education must underpin the preparation to advanced roles. To enhance the quality of the education and unify the core

competencies guiding the curricula and its implementation, a national network of NP teachers was established in 2020. An expert group representing 13 UASs started to prepare a consensus document on the core competences for the UAS NP degree programs. The consensus [18] was based on expert panel workshop, cross-mapping of six international NP competence standards/descriptions. The core competencies (Fig. 1) were formed as a framework intended to guide the development of the advanced practice education in Finland, to support the collaboration between the UASs, and to provide a tool in planning ACP (Advanced Clinical Practitioner) education as not all students are RNs, but also allied health professionals.

It is still noteworthy that UASs have strong autonomy and they are not obligated to follow the framework developed by the expert panel. One legal hindrance is that based on the law regarding master’s education at UASs, clinical practice is not acknowledged as a part of education. Within some programs clinical skills are practiced, e.g., in clinical skill labs which are held at the UASs, but this varies. There is no national data on the different models to fulfill the education and the clinical components of the curricula. Thus, the clinical competence evaluation is part of the programs. Due to this vagueness and variations, it can be sometimes difficult for the employers to utilize the graduating professionals to their full extent, and this is to create confusion and frustration, both for the NPs and the employers.

The assignments and master’s thesis are completed primarily in one setting with one preceptor (who can be an experienced RN or a physician, and in addition the student has teacher support). The number of hours allocated for assignments varies between courses and programs. The master’s thesis amounts to 30 ECTS credits. Examples of the thesis topics include “Development of chronically ill patient’s self-care” or “Development of NP role within the organization.” The assignments and master’s thesis are done in collaboration with the organizations and are evaluated and rated against learning goals (competence-based curricula). Currently, the



Fig. 1 Core and subcompetencies of the Finnish NP programs [18]

process to further develop the clinical training is under development. This requires not only close collaboration with the health care organizations but also regulatory and government support, for instance establishing trainee positions within the health care system.

The NP programs vary depending on whether the program is generic or has a specific focus on a certain specialist field, e.g., palliative care or mental health. Most of the programs within a specific field of nursing are delivered by a network in which each UAS has the responsibility to provide general studies on applied research and development, health care services, and leadership for their students. In the network implementation, each of the network UAS produces at least one course on the specific nursing field for students (20–30 ECTS). The network model supports the possibility to have more narrow specialist foci in a small country like Finland. There is no national coordination or guidance on which clinical specialty the degree programs are offered.

Nurse prescribing is not a routine part of the NP program, since the prescribing education is regulated with national curriculum, competence requirements, and national qualifying exams. However, the completed nurse prescribing education can be included through recognition of prior learning as part of the NP studies. In some UASs, the NP students can study the theoretical parts of prescribing education. However, not all UASs offering clinical master's degree education offer prescribing education. Again, nurse prescribing is already regulated and registered and can be a function of RNs.

Currently, the universities have had limited interest to provide clinically oriented NP programs, as the focus of the university master's degree programs has been geared toward research and leadership to prepare students for management, leadership, research, and teaching roles. However, in 2021 Åbo Akademi University launched the first university-based NP program. This pilot program also includes clinical training, but not prescribing. The education is worth 120 ECTS, and it contains master's thesis and will lead to master's degree in Clinical Caring Science.

As the NP is not a licensed professional role, it is not possible to identify the quantity of NPs in Finland. Both specialist nurses and NPs often have independent appointments with patients and they work in direct clinical patient care. As a distinction to specialist nurses, the NPs often integrate consultation, research and development tasks, and teaching. In some organizations NPs work as team leaders. The Finnish NPs work both in primary health care services and in specialist care services [11].

One could argue, that when compared to ICN guidelines [17] the RNs in Finland, having the educational component of master's degrees (UAS or University clinical Master's) as well as prescription rights currently possess the advanced clinical and academic skills that are required for the full NP role. Unfortunately, there is no national data on the numbers of the RNs who have both qualifications, or of their scope of practice, work description, or of their titles in the workforce. There are regions and organizations that have fully utilized these professionals, but the situation for Finland in whole cannot be fully described due to the lack of data.

Clinical Nurse Specialist

Clinical Nurse Specialists (CNSs) work mainly in the university hospital settings [7] in a role focusing on evidence practice development, staff education, and organization strategy development [11]. The main difference between the CNS and NP is that CNSs function typically more in system level activities [7] while NPs function more in direct patient care [11]. Currently there are no consistent education programs for Clinical Nurse Specialists (CNS), even though two universities in Finland have a clinical nursing science program (University of Turku and University of Oulu).

Typically, the CNS positions have a minimum requirement of master's degree with Nursing Science as the major. The master's degree in Nursing Science can only be completed in the university. At the moment 73% of the Finnish CNSs have a university master's degree, 18% PhD, and 9% UAS master's degree [19].

Unlike the Nurse Practitioner, the title and role of Clinical Nurse Specialist is quite well established and acknowledged, although, like the NP, not regulated or registered. The first CNS positions were established in the early 2000s within university hospitals [6]. At the moment there are more than 120 RNs with this title in the Finnish health care workforce. More recently, the first CNS roles have also been introduced in primary health care services [19].

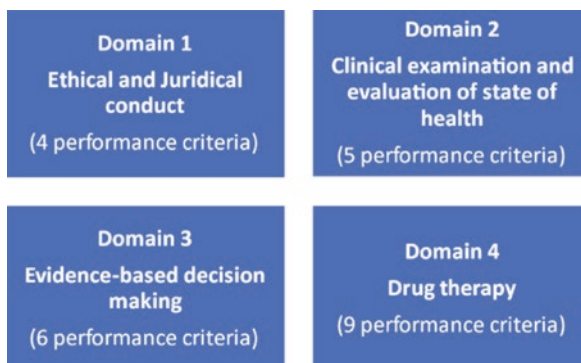
Nurses' Limited Prescription Rights

Prescription rights require at least 3 years of work experience and 45 ECTS credits post-bachelor education. The education is not a master's degree; however it has been officially set on the same EQF level 7 as are master's level degrees [20]. The education includes the clinical skills that can be seen as essential for the NP role (compare, e.g., ICN Guidelines on Advanced Practice Nursing, 2020). It does not, though, include the "academic" competencies of research, education, and leadership, that can also be seen as essential for the NP role. Although nurse prescribing is regulated, there are no uniform titles in the workforce for the nurse prescribers.

National curriculum created by a national network gives a common structure and content. The competence domains and number of performance criteria in each domain are presented in Fig. 2. The competence requirements on prescribing are equal to medical and pharmacy education in universities.

The study period for prescriptive rights is approximately 15 months with 20–22 contact days. During contact days, there are hands-on clinical patient examination practices with live patients and in simulation. Monthly modules are designed to connect clinical physiology, medicine, and pharmacology, latest clinical guidelines, patient examination, and clinical nursing. The e-learning environment contains over 60 hours of online lectures on pharmacology and numerous different tests and assignments for students' self-directed learning. The employer must agree on a physician that supervises the clinical learning during the studies. Competency is ensured in education through objective structured clinical examination (OSCE), pharmacology exam, case logbook and a national qualifying exam.

Fig. 2 Competence domains of Finnish nurse prescriber education



As of February 2023, 774 RNs, midwives and public health nurses have passed the education and 84 are now in the educational system. There are currently 691 RNs with limited rights to prescribe in the Valvira register. The nurse's right to prescribe is restricted with regard to the medical conditions, the list of drugs and to services. The decree [21] sets the list of conditions and drugs both for initiation of the medication in acute illnesses and for renewing the prescriptions in chronic diseases. The principles applied when creating these limitations were that the medical conditions would be common and there would be existing evidence-based medical guideline to follow. The drugs allowed for a nurse prescriber are considered the first-line safe medications. Nurse prescribing is permitted in the outpatient services that are offered in the public health service system. As the nurses that have been educated to this role are highly experienced, we observe that retirement from this role is quick and the push to administrative roles is greater than for RNs in general, which means these prescribers do not stay in the workforce for a long term.

Most RNs with limited prescription rights (nurse prescribers) in Finland work in primary health care services. The role of nurse prescriber was initially developed to enhance the population's access to health care services in rural areas where there was a deficit of physicians. At emergency departments and at primary health care outpatient acute clinics nurse prescribers have independent appointments, with patients, where they conduct clinical patient examinations and full anamnesis of patients as well as initiate laboratory tests. For patients with infectious diseases, e.g., with pharyngitis, urinary tract infection, conjunctivitis, or mastitis, nurse prescribers are allowed to prescribe certain antibiotics according to Current Care Guidelines described in the act concerning medical prescribing [21]. They also advise patients in the care of upper respiratory infections and explain why antibiotics are not always needed. No physician appointment or confirmation is needed for the treatment decisions nor for the medications. If the nurse prescriber identifies symptoms or conditions that are not in their scope of practice, they refer the patient to a physician.

At primary care outpatient clinics in health centers, nurse prescribers treat acute patient groups at their appointments as well as patients with noncommunicable diseases. They can conduct follow-up appointments for primary hypertension, coronary artery disease, angina pectoris chest pain, hyperlipidemia, asthma, and Type 2 diabetes, during which they can continue the defined medication, including warfarin for chronic atrial fibrillation. In these examples, the physician has previously made the diagnosis and a treatment plan with the patient. This treatment plan is electronic and available also for the RN to review. In Finland all prescriptions of medication are electronic. There are no paper prescriptions at all.

In primary health care, occupational health services, and in student health care, both starting care in infectious diseases and continuing medication for noncommunicable diseases is applied in nurse prescribing. In addition to these, nurse prescribers are tasked with contraception counselling and family planning clinics. They can start the contraceptives for their patients/clients, as well as prescribe vaccinations. In 2021 the services where nurse prescribers work was extended to cover home care and polyclinics of specialized medical care.

One can analyze the distribution of nurses with prescriptive rights regionally in Finland based on data provided by Valvira. In 2021, there were 709 rights per place of employment. Surprisingly, there was one well-being service county in the capital area with no nurse prescriber services at all. A very low availability of the service (0.2–0.11 rights/1000 inhabitants) was recorded in Lapland as well as in many counties with large cities. Five counties were recognized as leaders in developing nurse prescriber services with the availability of 0.28 to 0.47 nurse prescriber rights per 1000 inhabitants. Within the period of 10 years, nurse prescriber services have not developed equally in different areas of Finland. The slow development of the nurse prescriber services in some counties may relate to the better availability of physician services and to the presence of medical faculties in some large cities [22].

Laapio-Rapi [23] has identified the critical success factors of nurse prescribing in Finland, including a clear job description, a high number of client visits, and predetermined client groups visiting the right specialists from the multidisciplinary team in primary health care. Nurse prescribing is successful in units where the role of prescribers is clearly defined and differs from the role of other nurses, either entirely or in part.

Vision for the Future

Finland is undergoing major social and health care reform. The key objective of the reform is to improve the availability and quality of public health care services throughout Finland, as well as to curb the growth of costs [24]. To reach the objectives, it is time to promote and capitalize on the APN roles, together with varying stakeholders. For the systematic clinical career path, there needs to be a clearer

system framework between education, health, and the regulatory system, and the framework needs to reflect the health policy goals and population health needs.

Finland is an aging society, and the increase of noncommunicable diseases (NCDs) is a significant challenge. Citizens in Finland would benefit from having more advanced level trained, highly skilled nursing professionals that ensure the timely access to care and treatment, including the prevention and health promotion components of care. A functional division of duties between RNs and physicians allows both occupational groups to appropriately utilize their skills. It is essential to enable and protect RNs to practice to the full scope of their education and training, also on an advanced level. Finland is among the top advanced digital economies in the EU (Digital Economy and Society Index 2021), and NPs can also have a key role in providing and developing the expanding digital services.

In the future, it would be important to consider whether the nurses' prescribing right would be beneficial to be included in the master's degree NP education, if the NP role was licensed and regulated. This would also require having a nationally formalized NP curriculum and regulation which would increase the transparency of practice, and in that sense, also improve patient safety and the population's trust in advanced roles [11].

Due to multiple reasons, Finland is suffering due to severe lack of nursing professionals [25, 26], thus recruitment and retention are crucial questions for the services. Systematic clinical career possibilities, including salary development as part of the career development, could be one solution to increase the magnetism of nursing. To have enough APNs in the services would be beneficial also for all the RNs and the nursing profession, as the APNs advocate for and develop nursing as a whole, e.g., give consultation and support the implementation of coherent, evidence-based nursing practices [11]. Recently, the Ministry of Social Affairs and Health has launched a cross-ministerial strategic program (2022–2023) to secure the adequacy and availability of social and health care personnel, including a statement on continuous professional development and career paths as essential elements for recruitment and retention. Thus, it remains to be seen if the strategic program will support the development of the APN roles in Finland.

The Finnish Nurses Association is lobbying for a well-resourced position of a Governmental Chief Nursing and Midwifery Officer (GCNMO) with a mandate and power to regulate, control, monitor, and guide the field of nursing and midwifery on the national level [26]. To have such a strong national role could ease the regulation of the APN in Finland in the future.

To illustrate the current state of the career path to become a Nurse Practitioner, a case including an imaginary vision for the future is presented (Fig. 3). The hopes for the future in Finland are high, as long as we can build a strong national collaboration with shared aims.

The case of Sara Finn

Sara graduated with a bachelor's degree in 2012. She worked in registered nurse's position over 10 years, mainly on internal medicine inpatient and outpatient units.

In the year 2014 she completed specialized nursing education programme (30 ECTS, 1 year) on NCDs care. After this she started to work in an outpatient cardiology unit in 2013, first in physicians' appointment and from 2015 she has had her own appointment.

During the years 2016 –2017 she completed Nurse Prescriber education and was admitted limited prescription rights.

In 2018 she was accepted to a master's degree programme on Advanced Practice and finished the programme 2020.

Since the 2020, she continues own independent appointment, consults other units on patient care, and leads a nursing team. She is also now involved in a quality improvement project on evidence-based practice development, and also teaching in the hospitals in-house education.

What could be different in the future?

First, Sara would have been admitted training position first on specialist nursing and later for the nurse practitioner education. Clinical training would have been then as integral part of the development to become nurse practitioner. Second, she would have been admitted protected title of Specialist Nurse and later Nurse Practitioner. Third, she would be able to practice with full scope of her expertise, and Fourth salary compensation would have been part of her progress to advanced role.

Fig. 3 The imagined clinical career path of the Finnish RN Sara Finn in 2022 and in the future

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The Nurse Practitioner Role in Ireland

Daniela Lehwaldt and Emily B. Lockwood

Background

The Republic of Ireland is an island located in north-western Europe in the North Atlantic Ocean, west of the island of Great Britain. Ireland has a public healthcare system, run by the government-funded Health Service Executive (HSE), alongside private care settings. The current Irish system is primarily a tax-financed public system but with significant out-of-pocket spending, mainly in primary care, and with supplementary health insurance for private hospital coverage, with a 45% rate of public participation [1]. Another 14% comes from private health insurance, while out-of-pocket expenditure makes up the remaining 12% [1].

Currently, there are around 78,000 nurses and midwives registered to practice in Ireland [2]. Between those registered and on the pathway to registration, there are over 650 Registered Advanced Nurse/Midwife Practitioners (anonymous, email correspondence). The policy's aim within the country is to have 2–3% of the nursing and midwifery workforce practising as Advanced Nurse/Midwife Practitioners, which would see the registration number increase to 750 approximately (Department of Health 2019, <https://www.gov.ie/en/press-release/715a21-new-policy-on-advanced-nursing-and-midwifery-practice-launched-by-mi/#>).

The Report of the Commission on Nursing [3] provided for the most significant expansion of roles in the history of Irish nursing and midwifery [4–6]. There are two main titles referring to the specific role of Advanced Nurse Practitioner (ANP) roles or Advanced Midwife Practitioner (AMP) in Ireland. The title ANP in Ireland

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describes what is internationally known as the Nurse Practitioner (NP) [7]. Other advanced practice roles developed in Ireland are the Clinical Nurse Specialist (CNS) and Clinical Midwife Specialist (CMS), which will not form part of the discussion in this chapter.

The first Advanced Nurse Practitioner (ANP) role in Ireland emerged in 1998 in emergency nursing with a farsighted pioneer named Ms Valerie Small, accredited as an ANP in 2002 [5]. The primary rationale for this role was to respond to changing healthcare needs including financial constraints, consumer demands and the desire to retain experienced nurses with a clinical career pathway [5]. Since then, many more roles were developed and accredited.

Professional Frameworks

The ANP role in Ireland has been established within solid governance frameworks of accreditation led by the work of the National Council for the Professional Development of Nursing and Midwifery (NCNM). The framework for the establishment of ANP/AMP posts ([5], p. 5) defined roles as follows:

- ▶ ANPs/AMPs promote wellness, offer healthcare interventions and advocate healthy lifestyle choices for patients/clients, their families and carers in a wide variety of settings in collaboration with other healthcare professionals, according to agreed scope of practice guidelines. They utilise advanced clinical nursing/midwifery knowledge and critical thinking skills to independently provide optimum patient/client care through caseload management of acute and/or chronic illness. Advanced nursing/midwifery practice is grounded in the theory and practice of nursing/midwifery and incorporates nursing/midwifery and other related research, management and leadership theories and skills in order to encourage a collegiate, multidisciplinary approach to quality patient/client care.
- ▶ Advanced nursing and midwifery practice is carried out by autonomous, experienced practitioners who are competent, accountable and responsible for their own practice. They are highly experienced in clinical practice and are educated to master's degree level (or higher). The postgraduate programme must be in nursing/midwifery or an area which is highly relevant to the specialist field of practice (educational preparation must include substantial clinical modular component(s) pertaining to the relevant area of specialist practice).
- ▶ ANP/AMP roles are developed in response to patient/client need and healthcare service requirements at local, national and international levels. ANPs/AMPs must have a vision of areas of nursing/midwifery practice that can be developed beyond the current scope of nursing/midwifery practice and a commitment to the development of these areas ([5], p. 5).

The National Council for the Professional Development of Nursing and Midwifery ([5], p. 7) identified four core concepts for Advanced Nursing Practice in Ireland:

- ▶ **Autonomy in Clinical Practice** An autonomous ANP/AMP is accountable and responsible for advanced levels of decision-making, which occur through management of specific patient/client caseload. ANPs/AMPs may conduct comprehensive health assessment and demonstrate expert skill in the clinical diagnosis and treatment of acute and/or chronic illness from within a collaboratively agreed scope of practice framework alongside other healthcare professionals. The crucial factor in determining advanced nursing/midwifery practice, however, is the level of decision-making and responsibility rather than the nature or difficulty of the task undertaken by the practitioner. Nursing or midwifery knowledge and experience should continuously inform the ANP's/AMP's decision-making, even though some parts of the role may overlap the medical or other healthcare professional role.

Expert Practice

Expert practitioners demonstrate practical and theoretical knowledge and critical thinking skills that are acknowledged by their peers as exemplary. They also demonstrate the ability to articulate and rationalise the concept of advanced practice. Education must be at master's degree level (or higher) in a programme relevant to the area of specialist practice and which encompasses a major clinical component. This postgraduate education will maximise pre- and post-registration nursing/midwifery curricula to enable the ANP/AMP to assimilate a wide range of knowledge and understanding, which is applied to clinical practice.

Professional and Clinical Leadership

ANPs/AMPs are pioneers and clinical leaders in that they may initiate and implement changes in healthcare service in response to patient/client need and service demand. They must have a vision of areas of nursing/midwifery practice that can be developed beyond the current scope of nursing/midwifery practice and a commitment to the development of these areas. They provide new and additional health services to many communities in collaboration with other healthcare professionals to meet a growing need that is identified both locally and nationally by healthcare management and governmental organisations. ANPs/AMPs participate in educating nursing/midwifery staff, and other healthcare professionals through role-modelling, mentoring, sharing and facilitating the exchange of knowledge in the classroom, the clinical area and the wider community.

Research

ANPs/AMPs are required to initiate and co-ordinate nursing/midwifery audit and research. They identify and integrate nursing/midwifery research in areas of the healthcare environment that can incorporate best evidence-based practice to meet patient/client and service need. They are required to carry out nursing/midwifery research

which contributes to quality patient/client care and which advances nursing/midwifery and health policy development, implementation and evaluation. They demonstrate accountability by initiating and participating in audit of their practice. The application of evidence-based practice, audit and research will inform and evaluate practice and thus contribute to the professional body of nursing/midwifery knowledge both nationally and internationally ([5], p. 7).

Following the Nursing and Midwifery Board of Ireland (NMBI) taking over the registration of NPs in Ireland. The original four concepts were replaced with NP domains under their required competency development. In 2017, the NMBI published the *Advanced Practice (Nursing) Standards and Requirements* [8], which forms the national education framework for NPs in Ireland.

These requirements set out the following competencies and domains: maintaining professional values and conduct of the Advanced Nurse Practitioner; clinical decision-making skills, knowledge and cognitive competencies. Communication, interpersonal, management, team, leadership and professional scholarship competencies [8]. Please see Table 1 which briefly explains the domains of NP in Ireland as follows:

Table 1 Nurse Practitioner competency domains Ireland (based on NMBI)

<i>Domain 1: Professional values and conduct as an NP</i>
The NP must demonstrate accountability and responsibility for professional practice and, as lead healthcare professional, articulate safe boundaries and engage in timely referral and collaboration for those areas outside his/her scope of practice, experience and competence. The NP demonstrates leadership to support the well-being and health of those with acute and chronic disorders, disability, distress and life-limiting conditions; and articulate and promote the NP role in clinical, political and professional contexts [5, 8]
<i>Domain 2: Clinical decision-making competencies</i>
The level of clinical decision-making competencies includes a comprehensive, holistic health assessment, using evidence-based frameworks to determine a diagnosis and inform clinical autonomy, and utilising diagnostic investigations to inform clinical decision-making and display comprehensive knowledge of therapeutic interventions, including pharmacological and non-pharmacological advanced nursing interventions [5, 8]
<i>Domain 3: Knowledge and cognitive competencies</i>
The NP provides exemplary leadership in the translation of new knowledge into clinical practice. Knowledge and cognitive competencies are based on formal education and extensive clinical experience, ongoing reflection, clinical supervision, and engagement in continuous professional development. He/she educates others using an advanced expert knowledge base. The NP demonstrates a vision for advanced practice nursing based on a competent expert knowledge base that is developed through research, critical thinking and experiential learning [8]
<i>Domain 4: Communication and interpersonal competencies</i>
The NP maintains effective communication with the healthcare team through sharing of information in accordance with legal, professional and regulatory requirements [8]. The NP is expected to facilitate clinical supervision and mentorship and utilise information technology by legislative and organisational policies [8, 9]. The management and team competencies require the NP to manage risk for those who access the service through collaborative risk assessments and promote a safe environment

Table 1 (continued)

<i>Domain 5: Management and team competencies</i>
The NP promotes a quality care culture by proactively seeking feedback from persons receiving care, families and staff on their experiences and suggestions for improvement. The NP implements practice changes using negotiation and consensus building, in collaboration with the multidisciplinary team (MDT) and persons receiving care
<i>Domain 6: Leadership and professional scholarship competencies</i>
Within this domain, the NP demonstrates clinical leadership in the design and evaluation of services, engages in health policy development, implementation and evaluation. The NP identifies gaps in the provision of care and services pertaining to his/her area of advanced practice and applies the best available evidence. He/she leads in managing and implementing change [8]

Registration/Regulation

The ANP/AMP in Ireland is title protected and must be registered with the Nursing and Midwifery Board of Ireland (NMBI) [8]. The following criteria apply for registration as an ANP/AMP with NMBI.

In order to register, the applicant must:

- be a registered nurse or midwife with NMBI;
 - be registered in the Prescribers division.
1. Hold a master's degree (or higher) in nursing/midwifery or a master's degree which is relevant, or applicable, to the advanced field of practice. The programme must be at Level 9 (i.e. master's level) on the National Framework of Qualifications (Quality and Qualifications Ireland), or equivalent. Educational preparation must include at least three modular components pertaining to the relevant area of advanced nursing/midwifery specialised area of practice, in addition to clinical practicum.
- In recognition of services that span several patient/client groups and/or division(s) of the Register, provide evidence of validated competencies relevant to the context of practice.

<https://www.nmbi.ie/Registration/Add-New-Division/Advanced-Practitioners/Registering-as-ANP-AMP>

National Education Framework

In 2017, the Nursing and Midwifery Board of Ireland (NMBI) published the *Advanced Practice (Nursing) Standards and Requirements*, which set out the national accreditation guidelines and educational standards for ANPs. It outlines the standards and requirements for the approval of Higher Education Institutions, associated Healthcare Providers and education programmes that lead to registration as

an Advanced Nurse Practitioner. <https://www.nmbi.ie/NMBI/media/NMBI/Advanced-Practice-Nursing-Standards-and-Requirements-2017.pdf?ext=.pdf>

Currently there are seven approved Advanced Nursing and Midwifery programmes available in the country ([2] <https://www.nmbi.ie/Registration/Add-New-Division/Advanced-Practitioners/Registering-as-ANP-AMP>). Programmes are generally provided on a part-time basis and run over a 2-year period. Advanced Nurse/Midwife Practitioners in Ireland are registered by their specialised area of practice, unlike in other countries whereby registration is in a more generic division such as, for example, family nurse practitioner, nurse anaesthetist, etc. The ANP/AMP profiles published in 2010 and 2008 retrospectively showcase the various specialist areas where advanced roles have developed in Ireland.

The NMBI has also recognised the operational and strategic role and responsibility of the ANP in Ireland in the *Advanced Practice (Nursing) Standards and Requirements* [10]. The patient population commonly identifies ANP practice in primary or acute care settings. The main goal in healthcare both globally and in Ireland has been articulated as efficiency, effectiveness, sustainable operational governance, workforce planning and reduction in patient waiting times [6, 11, 12]. The reduction in medical staffing necessitated a transformation in healthcare and an opportunity for the nursing profession to expand in roles such as the ANP, which would impact the healthcare targets mentioned above [13, 14].

An evaluation of roles, known across Ireland as the SCAPE Project, refers to the examination of ANPs'/AMPs' roles and their clinical outcomes achieved. The national study involved the use of an extensive variety of quantitative and qualitative research methods and data collection tools [15]. The study demonstrated that patient care provided by ANPs/AMPs improved patient morbidity, promoted continuity of care and was cost-neutral. The main improvements found (strong and very strong evidence) in patient outcomes were summarised in a later report on key performance indicators [15]:

- ▶ Reduced morbidity
 - Decreased waiting times
 - Earlier access to care
 - Decreased re-admission rates
 - Increased patient/client throughput
 - Increased evidence-based practice
 - Increased use of clinical guidelines by the multidisciplinary team
 - Development of guidelines for local, regional and national distribution
 - Increased continuity of care
 - Increased patient/client satisfaction
 - Increased communication with patients/clients and families
 - Promotion of self-management among patients/clients
 - Working to expand and develop scope of practice to include more complex care provision
 - High levels of job satisfaction
 - Significant multidisciplinary support for role

- Provision of clinical and professional leadership
 - Audit and research conducted
 - Overall, no additional cost for ANP service (staff costs and activity levels were matched for ANP and non-ANP services. ANP services had decreased costs for emergency department minor injuries and sexual health).
- ▶ SCAPE report <http://www.tara.tcd.ie/handle/2262/68341>
- ▶ KPI's <https://www.pna.ie/images/ncnm/KPI%20Discussion%20Paper%203.pdf>

Policy Directions

Due to the success of ANP development in Ireland over the last 22 years, the Department of Health (DoH) [6] launched the 'ANP capacity-building strategy' to increase the capacity of ANPs in all areas of healthcare to maximise the nursing and midwifery response to healthcare issues. The policy on the development of graduate to advanced nursing and midwifery practice (2016) developed a new target of 2% of advanced practitioners in nursing/midwifery workforce to create an initial critical mass.

Additionally, the 'Sláintecare Action Plan' [6] identified the ANP as a solution to delivering care closest to the patient's home, with the governance to do so [6, 12]. A recent evaluation of ANP candidates in Ireland was undertaken to review the impact and implementation of these roles, findings recommended and performance to improve patient access to services [16]. Collaborative Practice Agreements (CPA) attached to a physician were removed from a requirement of ANP registration in an attempt to limit constraints to ANP clinical autonomy [8]. However, the Office of the Nursing and Midwifery Services Director (ONMSD) [16] evaluation reported that Collaborative Practice Agreements have remained in organisations, which attaches the ANPs scope of practice and prescribing rights to a physician's and other health professional's operational decision-making [16].

Historically, an NP's Collaborative Practice Agreement (CPA) was attached to the physician's registration, which has been a contentious issue, especially if CPAs were viewed as constraining to NP clinical autonomy [17, 18]. Practice Standards and Guidelines for Nurses and Midwives with Prescriptive Authority in Ireland [19] were integrated into the removal of CPA attachment to a physician's registration [19]. The Board of the NMBI approved removing CPAs in 2017 as a requirement for nurses' and midwives' registration and authority to prescribe. The clinical governance for prescribing medicinal products is now determined by the local health service provider's medicinal product prescribing policy, procedures, protocols or guidelines.

The registered nurse prescriber must prescribe within their scope of practice and continue demonstrating competency while fulfilling their role [8]. The registered nurse or midwife prescriber must also continue to audit their prescribing practice. The Director of Nursing/Midwifery/Public Health Nursing/Services or their

designated person must have overall responsibility and authority for the governance of registered nurse and midwife prescribing to ensure due diligence in their health service provider [8, 16].

However, due to issues of control over NP practice, some organisations have continued to assert CPA requirements, which remains a contentious issue [16, 17]. Conversely, NPs, by law, are not required to have a CPA which attaches the NP scope of practice and prescribing rights to a physician's and other health professional's operational decision-making [8, 16, 18].

The World Health Organisation (WHO) marked the year 2020 as the 'Year of the Nurse and Midwife'. Little did the world realise the catastrophic impact that a pandemic was about to bring (WHO 2020). ANPs have proven themselves to be valuable, frontline decision-makers who will 'step up' and play their part in dealing with COVID-19 and many other diverse healthcare challenges. However, this requires full utilisation of ANPs clinical autonomy in healthcare and reports of underutilisation of ANP clinical autonomy have been evidenced in healthcare literature [20–22]. The ONMSD reported recently that only a third of the sample ANP candidates in the evaluation study delivered complete levels of ANP clinical autonomy, specifically in discharge and referral to other specialists [16].

In Ireland, studies such as Begley et al. [15], Blanchfield and O'Connor [23] and Ryder et al. [22] have demonstrated the added value of NPs, particularly concerning improved healthcare indicators, improved key performance indicators (KPI) and high levels of clinical and operational leadership to improve patient outcomes and service need. Lockwood [17] reported high levels of clinical autonomy regarding independent prescribing, diagnosis and completing full episodes of care and independent admission and discharges without needing a physician [17].

NPs have shown to improve communication within the multidisciplinary team (MDT), improving accessibility of healthcare services, cost improvements, developing innovative practices, reducing waiting times and improving patients pathways [15, 16, 22, 23]. However, Lockwood [17] cautioned that NPs require time to develop their autonomous practice.

Clinical Autonomy - the everyday life of a Nurse Practitioner. One example of clinical autonomy is that Nurse Practitioners complete full episodes of care including assessment, diagnosis, and treatment of patients without the presence of a medical colleague. This means that the Nurse Practitioner, following extensive supervised practical training and master's level education, has to become fully autonomous in history taking, physical examination, ordering and interpreting diagnostic tests, and in processing all of this information to arrive at a medical diagnosis. Nurse Practitioners take a holistic approach; apart from the medical diagnosis they may also identify socioeconomic, domestic and spiritual (and other) needs. The NP needs to become fully autonomous in managing their patient caseload including independent prescribing of pharmaceutical and non-pharmaceutical items. They lead their patients and relatives competently through the treatment plan, educate them as they go along about their condition and treatments, and they manage their condition, whilst constantly interacting with services and allied healthcare

professionals for referrals and consults. They use the best available research evidence and clinical protocols to ensure high quality care. In order to do this, they need to be independently appraising research findings and apply them to their setting. They need to be crucially aware of their own levels of competences and their expertise, and they need to know when to ask for assistance from a superior e.g. the medical consultant. Whilst clinical autonomy goes way beyond that of any other clinical nurse, Nurse Practitioners practice within their scope of practice and code of conduct. This example is merely a snapshot of the autonomous role that Nurse Practitioners take on in their direct clinical practice. In addition to their direct clinical practice, Nurse Practitioners are leaders, educators in the classroom and at the bedside, advocates, national and international networkers.

Conclusion

NPs in Ireland have been driving healthcare provision for the last 22 years, with many roles emerging in acute and primary settings. They have been shown to be beneficial to patients, services and care pathways. Ireland has developed the NP role within solid professional, governance and education frameworks. Core domains of practice and competencies are clearly defined and the role is a title protected through registration with the NMBI. The registration of NP is a critical requirement in determining the full utilisation of the role in healthcare and reducing constraints to practice. Current healthcare policy requires NPs to impact and improve patient outcomes and drive quality patient care. There are some obstacles and hurdles to overcome, but overall the role has proven itself and is here to stay!

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Nurse Practitioner Development in German-speaking Countries: Germany, Austria, and Switzerland

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Introduction

Nurse Practitioner (NP) developments are a global phenomenon and they do include German-speaking countries. Health care systems in German speaking counties such as Germany, Austria and Switzerland have similar settings including community care, outpatient care, inpatient hospital-based care and rehabilitation facilities [1],

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all of which are suitable for the development of advanced nursing. The main difference is that nurse education can be at various levels from mainly apprenticeship training (e.g. Germany) to more academic (e.g. Switzerland). Without some of the crucial regulatory aspects to sustainably develop advanced nursing, roles are overall slowly implemented and the process is cumbersome. The following text describes advanced nursing historical backgrounds, contexts and NP developments in Germany, Austria and Switzerland. While there are some similar features, each of the countries has specific aspects supporting or hindering NP developments and these are explored and compared in this chapter.

The context of Nurse Practitioners in Germany

As mentioned in previous books of this series [2, 3], the introduction of Advanced Practice Nursing (APN) roles in Germany commenced in the early 2000s and it has, so far, mainly taken place in hospitals. In 2007, the “Sachverständigenrat zur Begutachtung der Entwicklung im Gesundheitswesen (SVR)” recommended the implementation of Advanced Nursing Practice (ANP) as an important aspect for future developments within the German health care service [4].

Since then, Advanced Practice Nursing (APN) roles have been implemented, albeit slowly. Considering the demographic and epidemiological challenges Germany faces, there is an increasing need for prevention and health promotion to reduce the impact of non-communicable diseases (NCDs) such as cancer, cardiovascular and chronic respiratory diseases and diabetes [5] have on the health care service. The number of (elderly) patients requiring treatment is growing and the severity of the disease or multimorbidity is increasing. This rising number of people with chronic diseases contributes to the existing and increasing shortage of general practitioners [6].

Based on paragraphs within the laws relating to the nursing professions and the social code (§ 14 Pflegeberufegesetz, § 63 Abs. 3c SGB V sowie § 64d SGB V), German federal states are obliged from 1 January 2023 to carry out mandatory pilot projects regarding the transfer of medical activities to qualified nurses. Currently, these pilot projects are mainly contained to the management of patients with chronic diseases such as diabetes, chronic wounds, dementia, arterial hypertension, pain, nutrition, but also tracheostoma, acute and chronic respiratory conditions (Bundesinstitut für Berufsbildung [7]).

Role Distinction

Considering the distinction between Clinical Nurse Specialist (CNS) and Nurse Practitioner (NP) on the continuum of APN roles (ICN 2020a, p.24) the vast majority of APNs currently practising in Germany are considered to be CNSs. The role of NPs have been discussed as a possible solution for the lack of medical staff in rural areas [8, 9]. However, the NP role is not about replacing doctors or

task-shifting; it is rather about autonomous practice with the responsibility for complete episodes of care, from the initial contact to the end of the (care) episode (ICN 2020). The role of Physician Assistant (PA) is relatively new and novel in Germany. PAs are educated to obtain a range of medical knowledge and skills, which opened up new perspectives for physicians and health care institutions in terms of delegating medical tasks [10]. The nursing association Deutscher Berufsverband für Pflegeberufe (DBfK) positioned itself, saying that physician assistants stand in competition to APN roles and are not viewed as a role for nursing ([11], p.1).

A nationwide or state-based registration as an APN/NP is currently not available in Germany. Even registration as a qualified nurse is currently only possible in one of 16 states in Germany, as nursing boards are only beginning to form in Germany. Generally, nurse registration is voluntary and autonomous practice is not specifically recognised in German law. Nurse education in Germany is mainly at apprenticeship level [12]. However there are bachelor's degree programmes and master's level programmes available for advanced nurses [13].

The German Network 'Deutschen Netzwerk APN & ANP g.e.V. (DNAPN)' facilitates networking amongst advanced nurses in Germany. They run regular workshops and APN and ANP congresses. Members are active in various working groups related to regions and specialties. They share their knowledge and expertise, and they publish together. One example is this chapter, which was written by members of the AFG International, one of the working groups of DNAPN.

NP Research Developments in Primary Health Care

While advanced nursing developments have traditionally focused more on CNS and on hospital-based settings, it is acknowledged that research may assist in developing NP roles within the primary health care setting (PHC) in Germany ([14], p. 31; [15]).

A previous project looked at how acute referrals from nursing homes to hospitals can be reduced by changing service provision in nursing homes. While the introduction of NP roles is not specifically part of the study, the provisions such as additional medical options as well as regular case conferences leading to specific, targeted cooperation between the stakeholders (nursing, medicine, pharmacies, hospitals) provided strong hints that an expanded nursing role may be central to reducing acute referrals from nursing homes [16].

Over the last two to three years, there have been more specific studies regarding APNs/NPs in PHC. One such project is called "FAMOUS" (Fallbezogene Versorgung Multimorbider Patienten und Patientinnen in der Hausarztpraxis durch Advanced Practice Nurses). This title can be translated into the following: "Case-related care of multimorbid patients in general practice by Advanced Practice Nurses." "FAMOUS" is the first study, in which APNs, after project-specific education and preparation, are based in General Practitioner surgeries. They carry out an in-depth, person-centred assessment, on which basis they develop individualised treatment plans, which they implement and evaluate in consultation with the family

doctor and, if necessary, continuously adjust. The study is currently ongoing and will be evaluated using a mix-method approach (Katholische Hochschule Mainz [17]).

There are efforts by the Rhineland-Palatinate's government to introduce nurses with additional education so that they can perform preventative home visits in the community. The main aim is to offer independent living to people over the age of 80 years. NPs may assess, diagnose and advice on and improve elderly's living conditions, which will be strengthened and stabilised through the nurse practicing autonomously at an advanced level. They may support social participation of elderly people, and the need for hospital-based care may be avoided or delayed through targeted NP interventions. The project commenced in 2015 across nine regions and by 2021, there were 43 nurses working in this advanced community-based role entitled "Gemeindegeschwister plus." (Ministerium für Arbeit, Soziales, Transformation und Digitalisierung [18, 19]).

Until recently, the role that advanced nurses can play has not been fully realised within the German health care service, nor has it been supported much politically. Therefore, it can be seen as a success that in their coalition agreement for the coming years 2021–2025 the government plans to introduce the new role of Community Health Nurses (CHNs) for Germany as part of their aim to strengthen the PHC, create PHC-centres and provide improved, low-threshold health care in disadvantaged communities and districts.

Community Health Nursing is mentioned as an example how nurses can "supplement professional care with medical activities" (ibid, p. 64). The coalition agreement only speaks about CHNs, and other nursing profiles such as advanced CHN, CNS or NP are not specifically mentioned. Legally the Community Health Nurse is a specialisation of a nurse, not a new occupational profile, and laws relating to nurses are applicable to CHNs as well [20]. The Agnes Karl Society for Health Education and Nursing Research, as part of the German Nurses Association, (DBfK) published a brochure in September 2022 outlining tasks and practice profiles for Community Health Nurses along possible practice fields such as PHC-centres, municipal or public health services as well as part of out-patient care [21].

There are great expectations connected with CHN and the impact its introduction will have on all areas of nursing: (a) because of the expansion of nursing competencies (b) the needed, but yet to be installed, payment rights and (c) the required master's level education related to CHN [22]. However, given the growing resistance of physicians towards the CHN role [23] a significant amount of leadership will be required from within nursing as well as from each APN in these novel roles for Germany to show the possible impact [24].

The NP Role in Austria

Manela Glarcher and Roland Essl-Maurer

History of APN in Austrian Health Care System

As in Germany and internationally, the complexity of the health care system, an increase in chronic illnesses, demographic changes, and the associated rising costs of health care provision are presenting all those working in the health care sector with major challenges in Austria. The health care system is characterised by high expenditure, especially on hospital inpatient care, with the third highest per capita health care expenditure in the EU in 2019. A comparison of OECD countries demonstrates that 40% of all deaths in Austria in 2019 were due to unhealthy lifestyles and behavioural risk factors such as dietary risks, low physical activity, increased alcohol intake and tobacco consumption. The number of physicians within the country generally is comparatively high, but the ratio to general practitioners is low. The average age of general practitioners is over 50 years. Around 60% of them are going to reach retirement age by 2025, which will cause a considerable decrease in the number of medical staff [25].

These data illustrate that in the future, a reduced number of medical staff will be available to care for an increased number of chronically ill patients. The care of people with chronic diseases but also the prevention and early detection of diseases as well as measures to promote health literacy in the Austrian population are thus increasingly becoming the focus of nurses with advanced knowledge and skills [26]. Considering the global trends, it becomes clear that in countries with a low density of general practitioners, primary health care has been expanded much more rapidly and APNs have also been integrated much more easily as a regular part of professional health care workforce [27]. Advanced roles in nursing are a possible solution to face these major changes.

Nevertheless, this development has not yet systematically emerged in Austria. Reasons for this might include a late start of academisation, as until 2016 most nurses were trained in hospital-based nursing schools in a three-year diploma course [28], as well as missing nursing regulatory bodies and a strong focus on a physician-centred health care system. Consequently, no concerted attempt occurred to transfer nursing education to the tertiary sector.

Since 2016, Austria is characterised by a dual-nurse education system. Students have the choice to either undertake a bachelor's degree in nursing at a University of Applied Sciences (180 ECTS credits—European Credit Transfer and Accumulation System) or train in nursing at a hospital-based nursing school. However, training programmes provided by hospital-based nursing schools will fade out by 2023.

The legal framework for nursing professionals in Austria is provided by the Health Care and Nursing Act [29], which defines three groups of nursing professionals:

- the registered nurse in general care (Diplomierter Gesundheits- und Krankenpfleger / Diplomierte Gesundheits- und Krankenpflegerin (DGKP) 4600 h of training),
- the specialised nurse assistant (Pflegefachassistenz (PFA) 3600 h of training), and
- the nurse assistant (Pflegeassistenz (PA) 1600 h of training).

Further professional qualifications based on master's programmes in Nursing Science or Advanced Practice Nursing are not reflected and regulated by law.

In general, master's programmes usually require 90 to 120 ECTS credits and end with the graduation after four semesters (or two years). Admission to the programme is only possible with a bachelor's degree or an equivalent and relevant degree programme [30].

As of 2022, 11 universities of applied sciences in Austria currently offer a bachelor's or master's programme and four universities allowed to introduce doctoral programmes in nursing.

Master's programmes cover all areas from nursing pedagogy, nursing management, advanced nursing practice to nursing science [31]. Master's programmes in Nursing Science primarily provide a broad understanding of nursing science, scientific theories and research skills. Depending on the educational institution, further focal points in the programme vary according to institute-related research activity.

Master's programmes for Advanced Nursing Practice serve to provide in-depth nursing and scientific professional training in order to qualify for nursing practice in complex and special health care environments that require the application of scientific knowledge and methods. Graduates work as clinical experts for evidence-based and high-quality nursing care in all areas of acute inpatient, day-care or outpatient nursing as well as in inpatient long-term care.

The master's programmes qualify students for subsequent doctoral programmes.

The introduction of mandatory registration for the nursing profession in 2019 was also significant for the professionalisation of nursing in Austria as it will allow for even more targeted nursing training planning. However, no qualification levels are currently mandatory and thus no APN levels are currently being recorded.

Despite this difficult situation for developments in nursing, a group of experts from Germany, Austria and Switzerland started their work to promote advanced nursing roles. The first approach was achieved in 2013 with a position paper of the German-speaking nursing associations Deutscher Berufsverband für Pflegeberufe (DBfK), Österreichischer Gesundheits- und Krankenpflegeverband (ÖGKV), and Swiss Nurses' Association (SBK), which defines APNs as nursing experts who have acquired expertise, decision-making skills and extended clinical practice for complex situations. Furthermore, it was stated that a master's degree is a prerequisite for this designation [32]. Throughout their specialization these nurses are able to care and support persons with specific health problems and their relatives in complex situations [33]. Nevertheless, it also becomes evident that further differentiation of the APN roles 'Clinical Nurse Specialist' (CNS) and 'Nurse Practitioner' (NP), as is common internationally and also indicated by current guidelines (International Council of Nurses (ICN), 2020) has not yet taken place in Austria.

Current State of APN in Austrian Health Care System

The first foundations for APN development have been established and education and training facilities are in place, although there is no legal regulation concerning

the training of APNs. Advanced Nursing Practice programmes have been successfully implemented at a few Universities of Applied Sciences (Polytechnics) (1) and universities (2). Despite the possibility of master's programmes for advanced practice nurses in Austria, currently there are no specific fields of activity or a defined role and job title [26]. Instead, efforts are concentrated on role development, implementation and establishment of the qualification level "APN nursing expert" in different health care structures. Thus, APNs are also successively mapped in professional career models, predominantly in the clinical area, analogous to the qualification level model of the International Council of Nurses [34].

The numerous activities that have been set up so far are based on individual initiatives of pioneers who use international roles and Hamric's integrative model of advanced practice nursing [35–37]. The feedback from APNs in practice demonstrates that the role is still unclear and that there exists a lack of structures and processes to establish it. However, role clarity seems to be essential for a successful APN implementation [38]. Activities of the first APNs focus on health prevention and promotion, patient education, promotion of health literacy of chronically ill patients, e.g. through counselling and education, nursing development, development and revision of nursing standards/standard operating procedures (SOPs), education and training of the health care staff, research and teaching, especially in the field of evidence-based practice (EBP), as well as tasks in advanced care planning and clinical leadership. Competencies in the field of medical diagnostics and therapy may only be assumed by APNs if ordered by a physician. Anamneses in the sense of "clinical assessments in nursing" are carried out in individual cases according to physician's orders [39].

The Way Forward

The Austrian path is characterised by a strong commitment of individuals and pioneers who follow international best practices. The Austrian Association of Advanced Nursing Practice (AAANP) is the national and international representative of ANP in Austria and pursues the goal of making Advanced Nursing Practice known as a specialisation and extension of the current nursing landscape in Austria and to contribute to its implementation and development. In addition, networking of nurses working in the field of ANP is being promoted (Austrian Association of Advanced Nursing Practice (AAANP)).

Since 2015, the Austrian ANP Forum has established itself in the community through regular newsletters, numerous events and networking meetings with the goal of making APN known in Austria and supporting its implementation in a wide variety of areas. The initiators and members are committed to contributing to their networks in the spirit of realising the APN role (ANP Forum Austria).

Austria has more graduates of APN master's programmes every year, who develop their role themselves or participate in career programmes of health care institutions. Thus, APNs can now be found in all areas and settings of health care, even if they are not (always) referred to as such. There is also an increasing number

of published studies dealing with role [40], or concept development [41], and experiences in care delivered by APNs [42].

The field of practical activity is consistently restricted to the legal framework by law and cannot be compared to international roles. For example, APNs in Austria are not allowed to make diagnoses or prescribe medication. Independent billing of nursing services with health insurance companies is also not possible. However, they are allowed to give invoices, which have to be paid directly by the person being cared for.

In particular, APNs see great potential in following international best practice models such as Family Health Nurse, School Nurse, Community Health Nurse, or in primary care. It would also be conceivable for the future that APNs with setting- and task group-specific specialisations, e.g. in paediatric and adolescent nursing, psychiatric health care and nursing, intensive care and anaesthesia nursing, renal replacement therapy nursing, hospital hygiene, wound care and stoma care, hospice and palliative care as well as psychogeriatric care as defined in the Austrian Health Care and Nursing Act §17 [2] [29]. In a report published in 2021 by the National Nursing Task Force, reference is made to the future expansion of the establishment of Advanced Practice Nurses Palliative Care in order to support relatives and enable the persons to be cared for to remain at home for longer [43].

Advanced Nursing Practice in Switzerland

Christoph von Dach, Christian Eissler, and Maya Zumstein-Shaha

In Switzerland, the discussion regarding Advanced Nursing Practice commenced at the beginning of the new millennium due to the move of nursing education to tertiary level (see Table 1 below for overview of Swiss master and doctoral level education offerings). With this change in the educational system, the question of providing academic and further education in nursing practice became important [44–47]. The Bologna Process, launched in 1999, created the European Higher Education Area (EHEA), which was symbolically opened in March 2010. Important points for Europe here are the three-tier study system with bachelor's, master's and doctoral degrees, the European Credit Transfer System, cooperation in quality assurance and the introduction of National Qualifications Frameworks (NQF) derived from the European Qualifications Framework for lifelong learning. For example, the NQF defines the underlying competence level of the Master of Science in Nursing (MScN) degree programmes [48]. This level of competence is now also reflected in APN's fields of action. In order for APNs to deliver extended nursing care with integrated medical skills and to provide holistic care to patients, they need highly specialised medical, ethical, humanistic and communicative knowledge of health care and systems. APN education needs to address these fields. Thus, APNs will be able to practice competently and face complex, unpredictable work contexts that require new strategic approaches [44].

Today, a total of eight programmes exist on the MScN-level for Advanced Nursing Practice all over Switzerland [51]. In all these programmes, about 200

Table 1 Overview of the timeline of Swiss master's and doctoral education in nursing

Year	Master of Science in Nursing/doctoral programmes	Focus	Institutions
1997	Start of a joint Master of Science in Nursing	Research	WE'G (Institute of further education in health care), Switzerland, in collaboration with the University of Maastricht, Netherlands
2000	Master of Science in Nursing, PhD in Nursing	Research, Advanced Practice Nursing	University of Basle, Institute of Nursing Science, Switzerland
2009	PhD in Nursing	Research	University of Lausanne, Institute of Higher Education and Research in Health, Switzerland
2009	Master of Science in Nursing	Advanced Practice Nursing, Research	Careum, Kalaidos University of Applied Sciences, Zurich, Switzerland
2010	Master of Science in Nursing	Advanced Practice Nursing	University of Lausanne, Institute of Higher Education and Research in Health in collaboration with the University of Applied Sciences of Western Switzerland
2010 ^a	Master of Science in Nursing	Advanced Practice Nursing	Universities of Applied Sciences Bern, Zurich and St Gall (joint curriculum), Switzerland
2018	Master of Science in Nursing	Nurse Practitioner	University of Lausanne, Institute of Higher Education and Research in Health, Switzerland
2019	Master of Science in Nursing	Programmes for Nurse Practitioner (NP), Clinical Nurse Specialist (CNS) and Research	Bern University of Applied Sciences Health, Switzerland
2019	Master of Science in Nursing	Advanced Practice Nursing, Research	Zurich University of Applied Sciences, Switzerland
2019	Master of Science in Nursing	Advanced Practice Nursing, Research	OST University of Applied Sciences, St Gall, Switzerland
2019	Master of Science in Nursing	Advanced Practice Nursing, Research	SUPSI University of Applied Sciences Ticino, Switzerland
2021 ^b	Master of Science in Nursing	Psychiatric Mental Health Nurse Practitioner (PMHNP)	Bern University of Applied Sciences Health, Switzerland

Legend: From 2000 onwards, all programmes followed the Bologna process. This process includes the harmonization of study programmes by using so-called ECTS (European Credit Transfer System). Thus, student and graduate mobility could be improved and fostered [49]. In addition, the Bologna process includes a European Reference Framework for lifelong learning [50]

^aThis joint programme of the Universities of Applied Sciences Bern, Zurich and St Gall was discontinued in 2018 and replaced by individual MScN-programmes at each University of Applied Sciences (i.e. Bern, Zurich and St Gall)

^bThe Bern University of Applied Sciences opened the PMHNP in 2019, to join the other three programmes: NP, CNS and Nurse Researcher

students are enrolled annually, with growing tendency. Currently, there are more than 1000 graduates from these programmes. The majority of them work in an

inpatient setting in Advanced Practice Nursing-roles [52]. A smaller number are educators and teach in the MScN-programmes. Only a few dozen are currently working in home health care and medical practices of family physicians.

The high numbers of graduates working in inpatient settings is due to CNS roles, which are well established for several decades. These nurse professionals are the cornerstone of high-quality nursing care [46, 53–59]. Professionals in CNS roles contribute to better patient care and provide interprofessional and team support [60]. More recently, the demographic changes, severe penury of health care professionals and increasing costs have led to the establishment of NP roles in inpatients' settings and general practice surgeries ([61–75]' [52]). Most NP roles are at early stages of development [62, 76]. Both CNS and NP contribute to better patient care and interprofessional and team support [54, 56, 57, 60, 65, 66, 68, 70, 71, 73, 74, 77–79]. NP contribution in medical practices of family physicians is considered positive. Evidence exists that NPs are predominantly looking after multimorbid persons, thereby providing easier access to health care, better coordinated care, better flow of information and family-centred care [54, 62, 66, 70–72, 77, 79]. Patients feel safe, well cared for and experience improvements in physical and psychological well-being as well as in daily activities [70, 71].

Whereas the implementation of APN roles in inpatient settings is less problematic concerning legal and financial issues, the integration in medical practices of family physicians and other ambulatory care settings such as home health care is challenging due to inadequate legal bases and financial reimbursement problems [80–82].

In 2020, the law of the Swiss Health Professionals came into effect. This law provides a regulatory basis for health professional education in Switzerland. In this law, it is maintained that the accepted entry to the nursing profession is on the tertiary level and can be completed either at a School of Higher Education ending with a Diploma in Nursing or at a University of Applied Sciences ending with a Bachelor of Science in Nursing. In contrast, the MScN-degree is not included, and therefore not regulated, in this law. In addition, inpatient settings are reimbursed through the Diagnosis-Related Group (DRG) system, which is a case-mix complexity system implemented to categorize patients with similar clinical diagnoses in order to better control hospital costs and determine reimbursement rates [83]. As such, it can be problematic to include health professionals of various backgrounds, including APNs. However, in the outpatient settings such as in medical practices of family physicians, the lack of legal regulation, and as a result the lack of acknowledgement of APN as service providers, presents huge obstacles. These barriers limit the integration of APN in ambulatory and outpatient settings [80, 82].

With the increase of graduate education in nursing in Switzerland, regulation was called for. In 2011, the Swiss Nurses' Association (SBK-ASI), the Association of Academically Prepared Nurses (VfP) and the then newly established interest groups of nurses working as Advanced Practice Nurses (SwissAPN) published a joint position paper on APN (Swiss Nurses' Association (SBK)). In this position

paper, these associations agreed on the need for APN in the Swiss health care system. It was maintained that APN needed to be academically prepared with at least a Master of Science in Nursing degree with an APN focus. A year later, the Nurses' Associations of the German-speaking countries, Austria, Germany and Switzerland, published a joint position paper on Advanced Practice Nursing [84]. This position paper defined the basic requirements for an APN role in the German-speaking part of Europe. The required prerequisites, as also mentioned in the previous sections on German and Austrian developments, were found to be a master's degree in APN. Based on these preliminary steps, the regulation organisation APN-CH was founded in 2019 and started accrediting APN in 2020 [85]. The framework of the Canadian Nurses' Association serves as its orientation (2019). Any nurse professional who has obtained an MScN-degree with focus APN, working at least 40% as APN in direct patient care and demonstrating at least 50 h of supervised practice can submit the transcripts and can obtain accreditation as APN. The regulation organisation APN-CH does not differentiate between the CNS or NP roles. Both roles are accredited as APN. The founding members of the APN-CH regulation organisation are the Swiss Nurses' Association (SBK-ASI), the Association of Academically Prepared Nurses (VfP) and the then newly established interest groups of nurses working as Advanced Practice Nurses (SwissANP) as well as the Swiss Nurse Leaders. As a result, the regulation is viewed as an important step in the establishment of APN in Switzerland. Since the inception of APN-CH, more than 100 APN have been accredited.

In 2021, the Swiss people voted on strengthening nursing and nursing education. As a result, the national government and politicians are working to provide adequate legal and financial bases to improve general working conditions, legal regulatory basis and financial reimbursement systems for nursing. Hopefully, this will lead to nurses as independent health care providers in Switzerland. At present, there are standard operating procedures per diagnosis that allow joint agreement from the medical professionals as well as APN on their area of work [86]. For APN in primary care, a scoping review has been published highlighting the various competencies and a specific job description has been developed [69, 70, 87].

Conclusion

This chapter demonstrates that NP developments are slow but they are occurring in German-speaking countries. Switzerland has the most developed NP roles out of the three countries addressed in this chapter. However, some aspects such as master's level education, implementation and competency frameworks are similar. The following table below summarises the discussions from this chapter with regard to educational, regulatory and practice-based backgrounds and contexts, which guide APN/NP developments in German-speaking countries (see below in Table 2):

Table 2 NP criteria comparison across German-speaking countries (in no particular order—Nov. 2022)

Item	Austria	Germany	Switzerland
Title protection	No	No	Yes
Registration/ Credentialing	No	No	Yes
Commonly used competency framework	Hamric and Hanson's Integrative Model of Advanced Practice	Hamric and Hanson's Integrative Model of Advanced Practice	Hamric and Hanson's Integrative Model of Advanced Practice, Pan-Canadian framework
Education level	Master's degree	Master's degree	Master's degree
Needs assessment	Locally	Locally	Locally
Implementation framework	PEPPA	PEPPA	PEPPA
Level of implementation into practice	Beginning to be implemented	Exploratory through research projects mainly	Beginning to be implemented
Clinical career pathways	Locally, not standardised across the country	Locally, not standardised across the country	Under development
Prescribing rights	No	No	No
National/Regional networks	2	2	1
Image campaign/ public awareness	Starting	No	Starting
Evaluation framework	PEPPA plus	PEPPA plus	PEPPA plus

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The Nurse Practitioner Role and Practice in Botswana

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Introduction

The Republic of Botswana was the first country in Africa to adopt the nurse practitioner (NP) role, and one of the early adopters worldwide. It is still one of the few countries in Africa to have formally established and implemented the NP role. This chapter highlights the many interrelated factors and processes leading to the development of the NP role in Botswana. It also describes the education, regulation, scope of practice, and current status of NP clinicians in the country, as well as current challenges and future directions.

Background

Country Profile

Botswana is a largely rural, landlocked country in the southernmost Africa bordered by Namibia, Zambia, Zimbabwe, and South Africa. With a relatively small population estimated at 2,346,179 and an area of 566,730 square kilometers [1, 2], Botswana has the lowest population density in Africa, and is one of the most sparsely populated countries in the world [3]. The two largest cities are, the capital Gaborone

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in the south with 208,000 residents and Francistown, in the north with 99,000 residents [4]. However, many of the country's inhabitants are spread over the expanse of the country's primarily arid desert countryside in small rural villages.

Prior to independence in 1966, Botswana (then Bechuanaland) was a British protectorate and one of the poorest and least-developed states in the world. However, since the discovery of significant diamond reserves in 1967, the Republic of Botswana has gained international stature as a peaceful and increasingly prosperous democratic state [5] with a re-distribution of resources such that it is the only country in sub-Saharan Africa to have achieved "upper middle income" status for its residents [6]. Furthermore, with these newly found resources the country set about improving the welfare of its citizens with social reform initiatives in education, infrastructure, and health care.

Health Care System

One of these reforms was the creation of a government-supported national health care delivery system, based on the primary health care (PHC) model, which emphasizes accessibility to basic services. The current health care system in Botswana is still dominated (98%) by the public sector [7] and organized into an extensive system of 27 health districts across the country with different levels of care based on the complexity of services provided. At the lowest level of care there are the 844 mobile health stops, 338 health posts, 171 clinics without beds, and 101 clinics which can also care for inpatients. There are also 14 primary hospitals and 14 district hospitals, with finally three national referral hospitals in the three largest cities, representing the highest level of the system [8].

History of Nursing and the Nurse Practitioner Development in Botswana

Early Years

Nursing has long played a predominant role in the country's health and can be traced back well before any formal health care, as part of female roles where women took care of the sick at home as part of the house chores. In 1890 the first health facility in the then Bechuanaland was a small mission built in northern Botswana by a Scottish medical missionary who engaged non-African white nuns assisting him with the care of the sick. The idea of nursing training for local women was realized in 1925 by the Seventh Adventist Church in the town of Kanye where for the first time three candidates from Botswana received on-the-job hospital-based training in the mission hospital, with no written curriculum, no classroom, and no stated hours or books [9]. Although similar efforts were made at several small clinics and mission-style hospitals in the ensuing years, health care in the country and consequently nursing, continued to be quite limited, until

independence in 1966. After separation from the United Kingdom, the newly established Republic of Botswana began to develop a government-run national health care system with nurses becoming the basis of almost all care, which spurred the nursing profession to expand significantly. Hospitals were being built and nurses were needed, not only at the bedside, but also to be the primary point of care for the health care in clinics in the rural areas.

Thus, the idea of a training institution was borne through the Botswana Ministry of Education, Health and Labour (BEHL) and the World Health Organization (WHO), which resulted in the establishment of the National Health Institute (NHI) in the capital city of Gaborone and affiliated health training institutions around the country, as per the Statutory Instrument No.96 [10] and 98 of 1969 [11]. The creation of the NHI, renamed the Institute of Health Sciences and Affiliated Institutions, provided the first formal training of practical nurses, nurse midwives, and later other allied health professionals in Botswana. Additionally, the need to educate nurses at a higher level to provide the country with additional nurse educators to train diploma-level nurses at the health training institutions was later met by the creation of a Department of Nursing Education at the University of Botswana [12].

Nurse Practitioner Role Development

The impetus for development of an advanced practice nurse practitioner role grew from the Government Rural Development Policy of 1972 and the expanded national health system in response to the WHO 1978 Alma Alta declaration for primary health care (PHC). The act prompted the building of a large infrastructure of primary health care facilities to provide care to all of Botswana's citizens across the largely rural, sparsely populated country, thus bringing a need for significantly more health care providers able to provide medical services in these mostly rural settings [13, 14]. At the time, the country was relying on a very few foreign-trained expatriate missionary physicians, and primarily nurses to provide care in the few existing facilities. With the expansion, nurses who made up the large majority of the health care workforce at the time were seen as the cadre that could be posted in this new expanded network of rural clinics to provide care. However, once implementation began, these bedside trained nurses were not equipped with the assessment and treatment skills to independently handle the common outpatient medical problems encountered in the community and demanded further education to meet the primary care needs of their patients [9].

Thus, in the late 1970s the Botswana Ministry of Health secured funds from the United States Agency for International Development (USAID) for a collaboration between Botswana and several universities with NP programs in the USA to develop a post-basic diploma in Family Nurse Practitioner (FNP) program. The FNP role was chosen because of its ability, generalist ability to care for the patient across the lifespan. These initial future NP faculty and preceptors were nursing educators from Botswana that were chosen to receive sponsorship to attend American universities

for graduate education as master's prepared NPs. On return to the country, they were given the responsibility to plan and initiate the first nurse practitioner education in Botswana. [9, 15]. The inaugural FNP program was initiated in 1981 at the government-run training institution for nurses, the National Health Institute in Gaborone, as a one-year post-diploma program, training the diploma prepared bedside nurse in advanced diagnosis and management with additional skills in dentistry and minor surgery [16, 17, 18]. In 1991 after curriculum review with feedback from graduates, the program was increased to 18 months of training to better prepare the FNP's to independently handle emergency situations as the sole health professional often in remote villages [19]. The advanced diploma FNP program was further revised in 2001 with increased emphasis on comprehensive family health services and again when a four-semester format was introduced [20, 18]. More recently, the University of Botswana in 2005 opened a Master of Nursing Science (MNS) FNP program, with its first graduates in 2007. The full-time MNS is a four-semester program consisting of didactic coursework, a research project, clinical practicum, and internship [21].

Nurse Practitioner Role and Scope of Practice in Botswana

Nurse Practitioners in Botswana

Nurse practitioners in Botswana can, and do work as NPs in a variety of inpatient and outpatient settings; however, most NPs provide much of the country's primary care in outpatient departments, urban and rural clinics, health posts, roadside mobile stops, and schools. There are currently approximately 500 diploma prepared NPs and 25 master's prepared NPs in Botswana. Most NPs are employed by the government as clinicians, administrators, or educators in public hospitals, clinics, health training institutions; however some work in industry, or other private entities like banks and schools. Nurse practitioners are included on the list of providers by the country's private medical insurance companies, and reimburse NP consultations at roughly 65% of what is paid to a physician general practitioner, with no differences in the charges for other services such as surgical procedures and basic medical examinations. [19].

Licensure and Regulation of the Nurse Practitioner Role

The Nursing and Midwifery Council of Botswana (NMCB) is the statutory body with the responsibility to regulate the nursing profession, including nurse practitioner education, licensing, and practice. The family nurse practitioner is currently the only recognized NP role in Botswana and there is no standardized certification exam available or required for licensure as an FNP. There are two (2) educational preparation levels of family nurse practitioners recognized by the NMCB: post-basic diploma and master's degree.

Diploma Program Licensure

Pursuing a post-basic advanced diploma in FNP determines the type of registration a nurse will be entered in upon completion of studies. The diploma program is designed for registered nurse/midwives to enable them to provide comprehensive primary health care services to individuals, families, and groups through assessment, diagnosis, and management of common diseases, health promotion, and disease prevention. For post-basic FNP diploma, applicants must have a basic diploma in general nursing with a minimum of two years of service as a general nurse and an advanced diploma in midwifery. Students in this program acquire skills through intensive theory from nursing, social and medical sciences, as well as public health sciences and concentrated periods of clinical practice [20, 19]. Upon completion of training, they apply to NMCB to be registered as nurses with a post-basic diploma [22].

Master's Degree Program Licensure

The master's degree in FNP prepares a professional with advanced knowledge and skill in the field of nursing, with understanding of methods of enquiry and established code of practice for the profession. Applicants for the master's program must have a bachelor of science in nursing and two years of nursing experience. Graduates from the program will have the capacity to do research to add to the body of nursing knowledge, assess, diagnose, and manage common primary health care problems. They will also participate in the promotion, maintenance, and restoration of the health of individuals, groups, families, and communities across the lifespan at primary level [23, 21]. Upon completion of training they may apply to NMCB to be registered as a nurse specialist [22]. In August 2016, a title-protected licensure and register was ultimately instituted in Botswana for nurse practitioners as one of the nurse specialist advanced practice nursing designations; however, applicants must have a master's degree in FNP to be eligible for this Nurse Specialist-FNP licensure from the NMCB [24]. Note that given that FNPs are educated at both the diploma and master's level, this nurse specialist licensure is currently not required for employment as an FNP in Botswana.

Nurse Practitioner Scope of Practice

The FNP role scope of practice in the country was initially outlined in a 1988 document developed by the Nursing and Midwifery Council of Botswana and the Ministry of Health Directorate of Personnel describing the duties of the family nurse practitioner [25]. The National Health Institute [20] later defined FNP practice as the following:

Family nurse practitioner practice is an area of primary healthcare nursing concerned with health promotion, health maintenance, and the provision of basic curative services. Its essence is the diagnosis and management of common health problems presented by individuals, families, groups and communities throughout the lifespan. The practice includes health assessment; ordering and interpretation of diagnostic investigations; diagnosis and

management of common health problems; referral and/or co-management of complex secondary level problems; provision of emergency care services; call management of chronic disease conditions; and individual and family counseling and preventative care including health education. (p. 4)

Nurse Practitioner Prescriptive Authority

Prescriptive authority is the level or extent in which a clinician may prescribe and administer specific medications and controlled substances. In Botswana, there is legislation and as well as guidelines endorsing overall general nurse prescribing, but none specifically for nurse practitioners. Further, the prescriptive authority legislation and laws in place for nurses, have lacked clear guidance on prescribing, regulation, or supervision.

Prescribing in the country is guided primarily by the Drugs and Related Substances Act (1992) which allowed all nurses to prescribe according to their training and the level of health service at which they work [26, 23] and the Nurses and Midwives Act of 1995 [22] outlined medications that nurses and midwives may prescribe, but it was silent on drugs that nurse specialists such as FNPs may prescribe. The subsequent 2013 Medicine and Related Substance Act [27], stated that the Minister of Health and Wellness in consultation with Director of Health Services may authorize limited powers of additional prescription of medicines to nurses, but offered no specific additions in legislation. This act did lead, however to the most recent and specific prescribing guidance for nurses in the country, the Botswana Essential Medicines List (BEML) [28]. The BEML 2016 is a guideline specifically for health care providers in government-run facilities and provided as follows: a list of the medications, who can prescribe, and specific availability in various settings. It stated that nurses can prescribe certain drugs at primary health care settings such as clinics and health posts as stipulated by Drugs and Related Substances Act (1992) [26]. It also outlined which types of drugs that can be prescribed by specific groups of nurses at government facilities. These groupings included what can be prescribed by general nurses and certain nurses with post-basic diplomas including midwives and psychiatric mental health nurses, as well as additional medications nurse specialists with a master's degree (including MNS prepared FNPs) can prescribe. This document, however, is a guideline and only for government-run facilities. Also, the vast majority of FNPs do not have master's degree and are not licensed as nurse specialists. Thus, many NPs in Botswana continue to prescribe medication to patients as per their NP training but without clear legislative guidance or regulation.

A Typical Workday for a Family Nurse Practitioner in Botswana

A typical day for a family nurse practitioner (FNP) in Botswana takes place most commonly in an ambulatory setting, primarily public clinics often with overnight capability, health posts, and outpatient departments of hospitals. This starts at 07:20

hours by receiving night clientele report from the night nurses who are usually registered nurses, but occasionally may be one or two FNPs. The report includes patient numbers, case reports of individuals, day-duty pharmacist information on any medications, out of stock and test reagents not in stock so that unavailable patient care resources are known. The NP asks questions to get clarity related to night-shift patient assessment and management and gives relevant information regarding as to what could have been done in some patient encounters. Most times clinics are staffed with one nurse practitioner and one registered nurse, and each assesses and manages patients in consulting rooms. Staffing may include one physician, however this is often only on an intermittent basis, i.e. once a week and sometimes as infrequently as once a month, particularly in rural areas. Patients are not usually scheduled and are seen in the consultation room on a first come, first served basis, or if needed sooner as per emergent triage analysis.

In the ambulatory setting the FNP assesses and manages clients across the lifespan for a wide range of acute and chronic conditions, also including preventive services and occasionally ophthalmic and dental care. The FNP consults with their patient load, and also receives referrals of complex patients from the RN. In more complex cases, the FNP will assess the patient and refer to the physician if at clinic or when next on-site, or to the regional hospital for specialty care. FNP management often includes rapid tests as necessary, e.g. hemoglobin, malaria, pregnancy test, urinalysis, and insertion of intravenous drip. FNPs also often dispense any needed medications. Patients usually carry a notebook in which the FNP will document their care. Also, completion of a clinic medical statistics record book of all conditions treated is a must. The FNP usually takes a 15-minute tea break between 10:00 and 11:00 hours if possible and a one-hour lunch break at 12:45 hours. The afternoon session starts at 13:45 hours where the process of consultation continues till 16:30 hours, in the case of an eight-hour clinic. Most FNPs do not leave on time and work overtime hours with no additional pay, because all patients seeking treatment at the clinic must be assessed that day. If it is a 24-hour clinic, the FNP gives a report to the night clinic staff, and the circle continues.

The Future of the Nurse Practitioner in Botswana: Challenges and Advancement

Although the FNP role started in Botswana in the 1980s, many aspects have been slow to develop and formalizing the role remains in its early stages, in terms of legislation and regulation of an advanced standardized educational pathway, licensing, prescriptive authority, and scope of practice recognition. Efforts are under way to remedy the gaps, but much still needs to be done.

Discrepancy between required educational levels for practice is one of several issues that has hampered development of formal recognition for the NP role. Despite the institution of the Nurse Specialist-FNP licensure, it is only available for master's prepared graduates. Further, the majority of FNP enrollment is still largely in the post-basic RN diploma FNP program since specialist licensure is not required for FNP employment. In addition to slowing progress toward role development, this

educational and regulatory inconsistency has led to a lack of recognition and misunderstanding of expectations for the role by regulators, health care administrators, and the public, such that diploma FNP graduates have often been placed in generalist nursing roles in hospital settings. To remedy this, the Ministry of Health and Wellness (MOHW) through Institute of Health Sciences (IHS) training unit is in the process of upgrading FNP diploma holders to bachelor's level and currently developing and transitioning the FNP diploma program to a bachelor's program. Further, to encourage nurses to upgrade their education, the MOHW (2022) released a proposed training plan to the nursing community indicating that there would be sponsorship provided for FNP students at the bachelor's and master's degree levels [29]. Finally, the School of Nursing at the University of Botswana has for some time envisioned offering an addition to their master's program, specifically through a distance online offering. A hybrid program, partially online offering of the FNP master's program was initiated in January 2019 with the hope to transition and benefit diploma FNPs and other working registered nurses to more easily obtain advanced degrees [30].

Family nurse practitioners in Botswana currently do not have an organized bargaining or advocacy body to speak for their specific needs, which in the past has resulted in decisions sometimes being made without their input. However, the process of establishing an FNP association has begun. The practitioners had been meeting annually from 2017 to 2019 at a central point in the country to map the way forward toward forming an FNP Association that would be under the Botswana Nurses Union and providing an advocacy and bargaining role specific to the FNP role. The FNP Association constitutional document was developed after 2019 and is currently in the process of the registration. In July 2019, a formal task group had been formed and assigned with specific FNP issues to discuss and with relevant authorities; however COVID restrictions impacted the process. To continue work, an online virtual platform has been created where issues pertaining to FNP practice are discussed and consultations of FNP stakeholders and regulatory bodies have been ongoing. Additionally, FNPs are working toward making a deliberate effort to "sell" their role to get due recognition. There is limited documentation about FNP in Botswana and a need for current studies on the practice is on demand with the MOHW.

Additionally, there has been some movement toward formalizing FNP regulations in Botswana with regard to standards of practice and prescribing. The NMCB has developed formal standards of practice for FNP Nurse Specialists. These standards of practice are in press and still to be gazetted and distributed. Additionally, in February 2022, the NMCB tasked a committee to develop regulation on FNP private practice, prescriptive authority, and other issues in anticipation of review and changes to the Nurses and Midwifery Act enacted almost 30 years ago.

Conclusion

Since the initial development and integration of the role in Botswana almost 40 years ago, the NP has become a mainstay for provision of primary health care, especially in rural areas. Although still evolving with many challenges yet to be

overcome, the role and its pathway for development remains an exemplar for other countries in Africa and elsewhere seeking a guide to implement the NP role.

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Nurse Practitioner Role in Kenya

Rachel Wangari Kimani and Eunice Ndirangu-Mugo

Introduction

Nurses in Kenya constitute the largest health workforce and are essential in realizing the goal of universal health coverage and improving the quality of health services, including promoting primary healthcare. Mortality and morbidity due to infectious diseases remain high in sub-Saharan countries [1]. In addition, emerging non-communicable diseases place an additional strain on health systems struggling to meet the needs of an ever-expanding young population [2]. The increased population and demand for managing complex and chronic diseases necessitate increased health workforce requirements for such services [3]. The effective and greater use of nurses in advanced practice is a potential measure to ensure universal access and cost-effective and quality service delivery.

The nurse practitioner role has had a slow and steady growth in sub-Saharan Africa (SSA) [4]. With the evolution of nursing practice and the emergence of nurse specialists and advanced practice nursing (APN) roles in SSA, questions on the potential of advanced practice and regulation of advanced practice emerged in

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Kenya. Though the APN programs have begun in Kenya, several contextual factors may still constrain the scale-up of the APN role. These threats include a lack of government and private stakeholders' investment to implement the role, including a lack of scheme of service, the institutionalization of the APN role, and a job-creation strategy.

Masters' programs in nursing were developed in the early 2000s, but APN is new in Kenya. Historically, the Nursing Council of Kenya (NCK) regulated nursing cadres up to the bachelor's degree level [5]. Therefore, if the APN's role is to meet International Council of Nurse (ICN) recommendations for autonomy and clinical expertise, various regulatory and human resource structural challenges would need to be solved. Otherwise, a lack of supportive regulation, education, and legislation that formalizes the expanded roles of nurses threatens the sustainability of the NP role.

Kenyan Context

Kenya is a lower-middle-income country with a population of over 53 million, of which 75% resides in rural areas [6]. Though private and public access to healthcare services is available, most people in rural areas rely on government-run services. Kenya devolved its healthcare system from a centralized national model to counties to equalize regional access to health services and the distribution of health resources (WHO, [7]). The 47 county governments are responsible for service delivery, including managing human resources. The national government is responsible for health policy, regulation, and pre-service training [8].

Kenya has a high burden of communicable diseases and a rapid increase in non-communicable diseases (NCD) and injuries [9]. Infections and maternal and neonatal deaths account for 54% of the total deaths. Between 2014 and 2020, NCD-related deaths rose from 27 to 39%, and it is projected to surpass communicable diseases by 2030 [1]. The major causes of NCDs include cardiovascular disease, cancer, diabetes, and chronic lung diseases. The life expectancy is 69 years for females and 64 years for males, while the maternal mortality rate is estimated at 362 maternal deaths per 100,000 births and 31 infant deaths per 1000 live births [6].

In Kenya, the healthcare workers' (HCWs, i.e., doctors, clinical officers, nurses, and midwives) ratio to the population remains below the WHO recommended standards. According to government reports, there are 13.8 HCWs per 10,000 persons compared to the recommended 44.5 HCWs per 10,000 individuals [10]. Approximately 70% of nursing personnel are women and comprise 80% of the health workforce in Kenya. There are 11.6 nurses per 10,000 people compared to the recommended 30.5 per 10,000 [11]. A concerted effort has been made to scale up the nursing workforce, which has led to a 41% increase in registered nurses, and 149% of bachelor's qualified nurses between 2015 and 2020 [12]. Bachelor's qualified nurses make up 7.7% of nurses in Kenya and the numbers for master's qualified nurses to remain unreconciled since they are not part of the HCW surveillance system.

History of Nursing in Kenya

The evolution of nursing in Kenya has been documented since the colonial period when Kenya was a British colony [12]. Training programs in mission hospitals were established to meet health service demands in major cities during the colonial period. The first registered nurses were trained in 1952. Kenya gained independence in 1963, and it was not until 1982 that the first Bachelor of Science in nursing program was started [13]. The Master of Science in Nursing was first approved in 2004 to train nurses for managerial and teaching roles [14]. Currently, training institutions train nurses at Certificate, Diploma, Bachelor's, Master's, and Ph.D. levels.

The regulation of nursing is the responsibility of the Nursing Council of Kenya (NCK). NCK also manages part of the Kenya Health Workforce Information System (KHWIS), which contains data on pre-service education, training, registration, continuous professional education, and deployment of nurses and midwives [15]. In addition, the NCK established the scope of practice, standards of education, and practice. The NCK and the Commission for University Education have over the past years been responsible for evaluating and approving nursing education programs at the university level.

The Master of Science Advance Practice Nursing is a new program in Kenya with two universities currently offering the program: Aga Khan University, Kenya, and Masinde Muliro University. The Nursing Council of Kenya, the main regulatory body for nurses, historically did not register and license above the bachelor's level. However, the recent push for universal health coverage and the evolution of advanced practice in sub-Saharan Africa has led to a change of strategy to clarify roles and create an APN scope of practice.

Drivers for Nurse Practitioner Role

Nurses in Kenya practice at advanced levels regardless of their defined role, formal graduate education, or licensure. One study found that nurses working in dispensaries and health centers who were likely to have lower nursing qualifications have greater autonomy than higher qualified nurses working in teaching or referral hospitals [14]. There is also a long history of nurses performing tasks beyond their scope to fill clinical providers' gaps. For example, there is evidence of nurses in marginalized areas providing curative services, including prescribing drugs [16]. Further, after five years of registration, nurses can apply to practice autonomously using a private practice license from the NCK. Still, this autonomous nursing does not meet the educational and competency criteria set forth by ICN for APNs.

The APN role has evolved in Africa in the last two decades. Evidence from Western and Asian countries affirms that APNs are effective in health service delivery, and this has fostered collaboration and support from international organizations, including the ICN and WHO. An example of such a partnership is the *Improving Nursing Education and Practice in East Africa* (INEPEA) project, a European-funded project exploring the potential for APNs in Kenya [14]. Through

persistent advocacy in the region, structural barriers constraining the growth of the APN role have been identified, and strategies gradually implemented.

Despite the growth of nursing education into bachelor's and graduate levels, clinical competencies are mismatched to the population's needs [17]. During the COVID-19 pandemic, for example, one study found that nurses lacked the knowledge to care for special populations [18]. Similarly, a shortage of nurses specializing in cardiology, forensics, emergency, oncology, mental health, and research has also been reported [19, 20]. The urgent need for human resource development in clinical areas has led the intergovernmental corporation to facilitate sharing of specialists as a short-term strategy. However, a long-term strategy of strengthening and scaling up clinical practice through the APN role is necessary.

Competency concerns include the gap between theory and practice and the lack of clinical leadership. Most of the nursing workforce has certificate and diploma qualifications. Government data shows that 61% of the nursing workforce are diploma-level registered nurses, 30% are certificate-level enrolled nurses, and 7.7% have bachelor's degrees [12]. It is unclear how many nurses have graduate degrees since they are not included in human resources for health statistics. Bachelor's and graduate level nurses out-migrate to other countries or leave the "bedside" nursing for teaching and managerial positions [14, 21].

Epidemiological changes such as an increase in non-communicable and chronic diseases require specialized and advanced nurses to address complex and chronic health problems. Approximately 39% of deaths in Kenya are attributed to non-communicable diseases, with an estimated 13.8% mortality due to cardiovascular disease [9]. National surveys indicate the prevalence of hypertension at 24.5%, diabetes at 3.1%, and preventable cancers such as breast, cervical, and colorectal account for 8% of overall national mortality [1]. Scaling up access to APNs with ICN-recommended education, clinical, research, and leadership competencies would substantially reduce these rates accelerating progress toward Sustainable Development Goals.

Kenya has had a chronic shortage of HCWs. The shortage of higher skilled clinicians led to the formal creation and implementation of task-shifting as a stop-gap measure. WHO released task-shifting guidelines to increase access to HIV services, but its application was extrapolated into other health services. WHO defines task-shifting as a "delegation whereby tasks are moved, where appropriate, to less-specialized health workers" (WHO, [22]). The Kenya 2017–2030 Task Sharing Policy and Guidelines were launched in 2017 to legitimize task-shifting between health professions in Kenya. For instance, nurses in Kenya have been initiating and maintaining most patients on HIV treatment without formal acknowledgment for decades due to a lack of clinicians. The task-sharing policy formalized the use of nurses in HIV services but also expanded the scope of nurses working in primary care settings, for example, to prescribe and give intravenous fluids [23]. Though the policy attempted to use the existing health workforce by shifting clinical tasks to "less highly trained workers," it failed court challenges due to restrictive scopes of practice [24]. As a result, there is a need to revise curricula and legislation collaboratively and create less restrictive scopes of practice, including for nurses.

Several government health initiatives have pushed the development of the APN role in Kenya. For example, the Kenya Health Policy Framework, 2014–2030, and the Kenya Health Sector Strategic Plan support the achievement of universal health coverage [25, 26]. Government priorities include reducing infectious, non-communicable diseases, mental disorders, the burden of violence and injuries, provisional primary healthcare, and strengthening health system stakeholders. To improve the access and quality of health services, the government has committed investments to improve service delivery and the capacity and numbers of HCWs.

Despite most of the population living in rural areas, HCWs are disproportionately distributed, with most services available in cities. In contrast, individuals living in rural communities are forced to travel long distances to seek care. As part of the commitment to devolution of services, health workforce strategies aim to attract and retain HCWs with an appropriate skill mix and equitably distribute them to meet universal health coverage (UHC) goals by 2030. APNs are not only a solution to the provision of services in rural communities but can provide leadership and clinical expertise that is needed to strengthen all levels of the health system in Kenya.

► **Case Study: Developing an Advanced Practice Nursing Program in Kenya** **Background:** It is essential to develop context-specific advanced practice nursing (APN) programs in Kenya. Aga Khan University School of Nursing and Midwifery East Africa pioneered one of Kenya's first APN programs. The objective of the APN program in Kenya was to create a master's educational program for bachelor's level registered nurses to foster an expert knowledge base, complex decision-making skills, and clinical competencies to provide adult care in line with UHC goals.

Methods: Developing an APN program was guided by the ICN APN recommendations, market analysis, stakeholders' input, and regulatory agencies in three interrelated phases.

Phase one: (Scoping and positioning) Included market analysis, stakeholder engagement, literature review, and alumni surveys. Market analysis in Kenya showed a need for a master's program aligned with the APN framework to provide clinical leadership. A previous study by East et al. showed that clinical officers might not necessitate the need for APNs. However, engagement with stakeholders (students, clinicians, regulators, and educators) affirmed the need for an APN program.

Phase two (Detailed design). Learning outcomes express which competencies learners will be expected to achieve and how they will demonstrate that achievement at the end of a learning activity.

These outcomes were created by faculty during retreats and capacity-building exercises with collaborators from the United Kingdom and Australia. Feedback was also sought from NCK, the Commission for Higher Education (CUE), and incorporated into the curriculum. Partner

universities' external reviewers reviewed the final document before implementation.

Phase three: (Regulation) The comprehensive curriculum document was presented to the Aga Khan University council, Nursing Council of Kenya, and CUE for approval. The APN -adult health program finally received CUE approval in mid-2020. The APN- adult program at Aga Khan University includes problem-based learning and supervised clinical practice in collaboration with physicians.

Results: The designed MSN APN curriculum offers a clinical track in adult health. The program was to start in the spring, 2020 Spring semester but was delayed by the onset of the COVID-19 pandemic. The first intake was in October 2020 with ten APN students. The program was designed to be a work-study program with students having two full days on campus for classes. The first group of graduates is expected to graduate in February 2023.

Conclusions: This curriculum development strategic approach demonstrates a congruent and logical step that allowed the development of a new program that prepares nurses to take new roles as nurse practitioners.

Adapted from presentations given at ICN NPAPN2021 and Sigma's 31st VIRTUAL International Nursing Research Congress [5, 27]

Nurse Practitioner's Scope of Practice in Kenya

In Kenya, the conceptualization of the APN role is ongoing (Table 1). Currently, there are no NPs formally registered to practice in Kenya. In 2022 the Nursing Council of Kenya released the Scope of Practice for Advance Practice Nurse Practitioners. The document describes APN educational requirements, training, licensure, certification, and professional responsibilities [28]. Similar to the ICN

Table 1 Progress of advanced practice nursing in Kenya

Advanced practice nursing in Kenya		
Title	Nurse practitioner Clinical Nurse Specialist	Defined by Nursing Council of Kenya
Scope of practice	Autonomous Authority to prescribe medication and treatment	Published by Nursing Council of Kenya May 2022
Licensure	Nursing Council of Kenya	None
Accreditation	Commissioner for University Education/Nursing Council of Kenya	1. Aga Khan University, Kenya 2. Masinde Muliro University
Education	Master's Program APN	Defined by Nursing Council of Kenya Advanced Practice Nursing Scope of Practice

guidance, the NCK recognizes two types of APNs (Nurse Practitioners (NP) and Clinical Nurse Specialists (CNS)) [29]. However, the current scope of practice applies to NPs, and the CNS scope is yet to be defined.

The NP scope of practice is in addition to the Bachelor of Science in Nursing degree scope of practice. NPs have graduate degrees, clinical training, and autonomous authority to practice beyond a bachelor’s level registered nurse. The Kenya APN-NP scope of practice defines APN as “a specialist nurse who has acquired, through additional graduate education (minimum of a master’s degree), the expert knowledge base, complex decision-making skills and clinical competencies for Advanced Nursing Practice, the characteristics of which are shaped by the context in which they are credentialed to practice.”

The NP scope of practice identifies four competencies expected of NPs: education, clinical practice, leadership, and research (Fig. 1). NPs work autonomously and collaboratively to assess, diagnose, treat, and manage patients in outpatient and inpatient settings per existing clinical guidelines. As clinical leaders, NPs work in multidisciplinary teams to develop and implement clinical guidelines and health policies, manage resources, and review mortality and morbidity cases to improve individual, family, and community health outcomes. They also provide educational leadership by identifying, developing, and implementing nursing curricula and fostering professional development for nurses and allied professions. Moreover, they contribute knowledge by conducting research, analyzing, and disseminating findings to inform evidence-based care and advocacy.

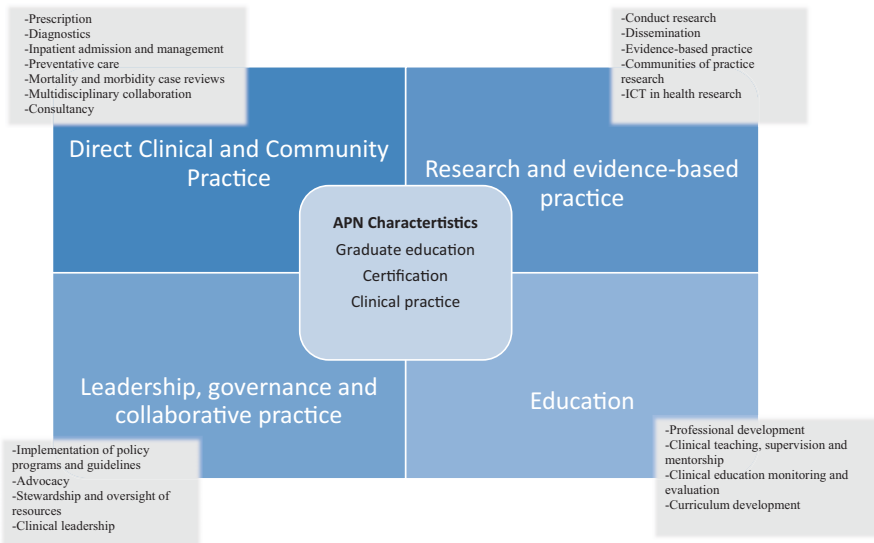


Fig. 1 Nurse practitioner competencies in Kenya

Future of Nurse Practitioner Role in Kenya

Nurse Practitioners have effectively improved health outcomes and substantially reduced mortality and morbidity in other countries [30]. In Kenya, they have the potential to improve stalled health outcomes such as maternal, child, and infant mortality. In addition, NPs can be the key to the universal provision of care, which is necessary to reduce the rising NCDs. To realize this potential, NPs must have sufficient knowledge, skills, and an enabling work environment. Moreover, for NPs to provide quality care as reported internationally, they require a full scope of APN competencies that meets international standards and be integrated into the health system.

There have been significant strides to advance the nurse practitioner role in Kenya by approving two APN programs and launching a scope of practice. However, it is unclear how and when the NCK plans to register and license NPs graduating from approved programs. There has been no surveillance of master-level nurses or licensures authorized for those NPs who completed approved programs outside the country. It is, therefore, challenging to estimate the number of graduate-level nurses who meet the competency required to practice as an NP in Kenya, as articulated in the newly released NP scope of practice. It is also unclear how many NPs are practicing in Kenya under the private practice license offered to nurses with over five years of clinical experience. A private practice license gives nurses autonomy to practice but does not meet the educational and competency criteria set forth by ICN or NCK for APNs.

Given the lack of consensus on the role of bachelor's level nursing in Kenya's health workforce, justifying the need for advanced practice education is bound to remain a challenge. While progress has been made to develop APN educational programs in line with the ICN APN guidelines in two universities, it is unclear how unified requirements are and whether graduate NPs have the required competencies to practice within the new scope of practice. Further, the faculty shortage has been a persistent issue in training institutions in Kenya. Therefore, educating and recruiting more multidisciplinary faculty to teach and supervise advanced practice students is necessary to scale up nurse practitioners' education quality.

The NP scope of practice is a big step in the right direction in institutionalizing the NP role in Kenya. Ultimately, more needs to be done to get stakeholder buy-in and incorporate APNs in health workforce strategies. With the devolution of health services, the national and county governments need to be involved in understanding the effectiveness of the NP role and investing resources in creating jobs and recruiting and retaining APNs. NPs need recognition from regulators and county and national leadership for this significant investment to materialize. Additionally, to accurately estimate and distribute APNs, exact numbers of service training, graduation, and licensure of APNs need to be integrated into the current Kenya Health Workforce Information System surveillance by NCK. Furthermore, the ministry of health needs to update workforce norms and standards to facilitate hiring APNs as clinicians in health facilities. Discussions on the financing and infrastructure of human resources for health that includes APNs are also essential in establishing

financial commitment to create jobs and encouraging nurses to pursue a career in clinical practice.

The quest to formalize NP's prescriptive authority through Kenya's medical and pharmacy boards has yet to be implemented. Given previous task-shifting challenges during the Kenya Task Sharing Policy and Guidelines implementation, engagement, and collaboration with allied stakeholders, especially those with shared tasks, may mitigate the risk of judicial challenge [24].

Conclusion

Kenya is undergoing population and epidemiological changes that demand skilled and competent clinical leadership. Nurses have been filling the clinician gaps in marginalized settings without the requisite education, authority, or recognition. Therefore, creating an educational pathway to advance nursing education, practice, and regulation will enable nurses to practice to the extent of their skills and knowledge. A substantial scale-up of APNs is needed to provide preventative services, manage chronic diseases, and achieve the UHC goal. In the past year, significant achievements have been made to launch APN programs meeting ICN recommendations and institutionalizing APNs by establishing the NP scope of practice. However, more must be done to create a licensing pathway and increase employer and stakeholder buy-in. The future role of the NP role will depend on the synchronization of APN education to meet population demand, regulation, engagement of stakeholders, and the incorporation of the APN role in health workforce schemes of service.

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The Nurse Practitioner Role in Tanzania

Joseph Kilasara Trinitas and Jane Blood-Siegfried

Introduction

Tanzania is a sovereign nation in Africa, also referred to as the United Republic of Tanzania. The country is located just south of the equator, on the eastern coast of Africa and occupies a total area of 945,087 square kilometers (364,900 square miles). Tanzania's population is estimated to be 60 million [1].

Background

The global health care system has always struggled with a shortage of health providers. Effective utilization of the health care workforce is paramount to ensuring high-quality and cost-effective care delivery. The World Health Organization [2] stated that 20 to 40% of the deficiency in the health system is due to workforce inefficiency and weaknesses in health workforce governance. Across all countries, about 50% of the health workforce are nurses. Nurses play a critical role in health promotion, pediatrics, maternity, aging, and non-communicable diseases. They are key to the achievement of universal health coverage and achieving Sustainable Development Goals [3]: 3.1, 3.2, 3.3, 3.4, 3.6, 3.8, and 3.9 [4]. Nurses are more than capable of meeting these needs with comparable health outcomes when compared

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to physicians [5]. As the world struggles to increase the number of health care providers, the most critical action should be to integrate and optimize the contribution of all health care professionals functioning at their full capacity.

Current Situation

Tanzania has made significant progress in reducing infant mortality, malnutrition, HIV, tuberculosis, and malaria. But like much of the world there is an escalation of non-communicable diseases such as hypertension, diabetes, cancer, renal diseases, and maternal and neonatal mortality. However, the biggest issues are equitable access to health services, essential primary health care, and access to health coverage. These services remain elusive for millions of people, particularly in rural areas [6].

Access to primary and specialty health care in Tanzania is often lacking due to the limited number of trained clinicians who can provide appropriate services, especially in rural areas which dominate much of the country. Nurses in these areas become the providers. Yet because of lack of educational programs, nurses continue to function beyond their educational preparation and scope of practice, to meet the health needs of the community [7].

The WHO 2008–2012 progress report on nursing and midwifery stressed the necessity to develop specialized nursing and advanced practice nursing (APN) roles with the core competencies to meet population health and health services needs as a means to revitalize the primary health care systems [1]. They developed the concepts of *task-shifting* and *task-sharing* to allow nurses to meet specific needs: however, these programs are very individualized to cover limited diseases and procedures and do not address the capabilities of nurses in advancing primary health care. Many of these nurses have had to cross the boundaries of their own education to fully meet the health needs in their communities, without adequate educational preparation. Strengthening nursing practice through comprehensive educational programs is a perfect strategy to promote access to primary health services. Over the past years nurse leaders across Africa have begun to explore ways to advance nursing practice by developing new nursing roles and educational programs in their countries [8].

In Tanzania, and many other countries, the discussions about *task-shifting* have delayed the creation of meaningful comprehensive educational programs. They have not made significant progress toward developing and implementing a reasonable APN role. According to the government of Tanzania, one of the first steps to achieve the goal of health is to ensure access to health care workers with enough resources and capacity to deliver quality care. Today these goals are not met, and the situation is worse in rural areas. Due to the lack of professional health care workers in Tanzania, especially in geographically remote areas, nursing staff perform duties beyond their formal education level [7]. Health care worker shortages are largely responsible for poor health outcomes in Tanzania, including increased maternal and child mortality [9–11].

Nursing Practice

The Tanzania Nursing and Midwifery Act [12] defines nursing practice as the provision of care to help people promote, maintain, and recover their health, cope with health issues, and achieve the best quality of life. Nurses are accountable for their decisions and actions, and for ensuring their professional competence [13]. Tanzania's nursing scope of practice gives nurses an independent and self-regulatory mandate to prescribe medications, carry out minor surgical procedures, and perform other complex tasks in the absence of a physician or medical doctor [13]. This act was developed to favor the *task-shifting* policy that aims in addressing health workforce shortage in rural areas, with very specific, but constrained needs. *Task-shifting* has been successfully used in Tanzania to increase access to anti-retroviral therapy, family planning, and the treatment of malaria and tuberculosis; but it does not address the broader issues related to preventive and primary health care needs in the country. It also does not take into consideration that nurses in Tanzania are professionals. The nurse practitioner role is not *task-shifting*; it is an advanced practice specialization. As the largest group of health care professionals in the country, nurses are one of the best resources for solving issues of health care access as advanced practice nurses.

The International Council of Nurses [14] defines the advanced practice nurse as follows:

A registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for advanced practice, the characteristics of which are shaped by the context and/or country in which he/she is credentialed. [15]

According to the Tanzania Nursing and Midwifery Council Scope of Practice document (2014), an advanced nurse practitioner is “a registered nurse who has completed specific advanced nursing education and training in the diagnosis and management of common as well as complex medical conditions” [13].

The Initiative

Kilimanjaro Christian Medical University College (KCMUCo) Faculty of Nursing at Moshi, in northern Tanzania, has been working in partnership with Duke University School of Nursing (DUSON), based in the United States, to develop a Family Nurse Practitioner (FNP) program. This APN specialty is educated to deliver primary and acute care for patients at all stages of life. The Family Nurse Practitioner has been successfully providing comprehensive health care in the United States for more than 50 years. The program is intended to cover the shortages of physicians, especially in rural areas, by allowing educated and competent nurses to assess, diagnose, and treat common illness in primary health care facilities.

To provide a baseline of need for Tanzania, a needs assessment (GAP analysis) was conducted by KCMUCo faculty members and DUSON to assess the realities of

nursing in four rural regions of Tanzania. These data demonstrated several important findings. Tanzanian nurses, medical professionals, health care administrators, and community members were all positive that an advanced nursing role would benefit Tanzania. Nurses also stated that they knew they were practicing above their educational limitations but were compelled to take care of the patients when no other providers were available. They were caught in a moral dilemma and recognized they needed more education. The nurses participating in the study represented all levels of nursing, but the majority were either certificate or diploma level nurses. Only a few had been trained by *task-shifting* programs. As such the majority of nurses working in the rural areas are working beyond their level of education preparation and are not covered by the legal authorities or regulatory bodies and sometimes face legal implications when a patient has a negative outcome [7].

In 2015, in order to stimulate conversation about the Family Nurse Practitioner's role, a consensus-building conference was organized in Arusha, Tanzania. All potential stakeholders were invited to attend: the Tanzanian Ministry of Health, Tanzanian Nursing and Midwifery Council, Tanzanian Commission for Education, representatives from the medical and nursing professional organizations, and from Tanzanian schools of nursing. Following the conference, KCMUCo was given permission by the Tanzanian Ministry of Health to start a pilot FNP program. The Ministry of Education, Science, and Technology was also informed [16].

Since that time, the first faculty member from KCMUCo has obtained a master's level degree as an FNP from the University of Botswana and is currently continuing to teach students and practice at KCMUCo. The process of developing a program has been slow but continues on. The Aga Khan University in Tanzania is expected to launch the first APN program. The curriculum is currently approved by the Tanzania Commission for Universities (TCU) and the Ministry of Health (MoH). The program will be offered at the master's level and is expected to begin enrolling nursing students in 2023. It is a significant step forward for the country in terms of implementing the APN role. The APN program will provide nurses with opportunities for career advancement and encourage continuing professional development, which is critical given that nurses from developing countries frequently relocate to developed countries in search of better pay and opportunities for advancement.

NP Educational Preparation

The fundamental level of nursing practice and access to an adequate level of nursing education that exists in a country shapes the potential for introducing and developing Advanced Practice Nursing [15]. There is some disagreement over the level of education necessary to practice as a family nurse practitioner; however, it is very dependent on the needs of the country. Given the fact that the majority of nurses residing in rural Tanzania hold a certificate or a diploma qualification, it would be challenging to raise them to the master's degree level. Therefore, the consensus meeting agreed that nurses could be trained at the bachelor's level with re-evaluation of this decision over time [7]. It is reasonable that many Tanzanian nurses who are

currently diploma trained would be well prepared to practice as nurse practitioners through advanced training at the bachelor's level. Additionally, earning a bachelor's degree would significantly aid in their career advancement and enable them to have more financial security. There is precedence for this decision. The FNP role was successfully implemented in the United States, Botswana, and many other countries as a certificate program, or at the bachelor's level. These have evolved over time to the standard master's level preparation. Holding a diploma degree with an average of B+ or a GPA of 3.5 and at least two years of experience and an RN license are adequate prerequisites for admission to the nurse practitioner baccalaureate program.

Tanzania faces a number of difficulties in providing advanced training for rural nurses. While they pursue further education, the majority must continue to work at their health facilities. The lack of rural health care providers would only get worse if these important players are removed from an already overburdened health system to attend a university. Therefore, it is significant to employ the distance learning approach as an effective method to increase both the skills and the numbers of qualified health care workers capable of meeting the health care needs of the Tanzanian population. Educational institutions offering advanced training for nurse practitioners should give preference to hiring nurses who are willing to live and work in rural areas and assist them in staying in their communities throughout their educational program by using distance-based teaching methods delivered via internet or cell phone technology, supplemented by brief on-campus visits.

Challenges to the Implementation of the Advanced Practice Nursing

The APN role implementation is complicated and needs significant pre-planning to effectively introduce the role and define how it differs from that of other professionals. Eliminating the obstacles to APN practice is crucial to increase utilization of these effective and efficient health care providers [17]. Despite all the progress that has been accomplished in implementing the APN role in Tanzania, many barriers still exist.

There is recognition of a greater role for nurses but a lack of regulation and title protection for advanced nursing practice. This barrier exists at the organizational level whereby the lack of human resource planning and standardized job descriptions leads to the inability to practice within the full scope of the APN [18]. There is a lack of understanding of the role of an APN and the benefits it offers to the health care of the nation. This imparts a resistance to change that engenders a lack of support for the role. Resolving these barriers involves complex advance planning for introduction, mentoring, and taking into account the overlap between an APN and other professions.

Sangster-Gormley et al. [18] assert that a lack of understanding and awareness of the APN role may cause other professions to oppose adopting it. Physicians often object to the role's implementation because they believe that

APNs will take over some of their duties and roles as professionals [19]. Therefore, the physician community's unfamiliarity about the APN is a key barrier to implementing the role within any health care organization. Physicians must be provided the opportunity to gain understanding about the APN's function, scope of practice, and competences. This can be a slow and painstaking process, and this challenge exists in Tanzania as well as in many other countries around the world.

The primary element that restricts the APNs' scope of practice is the absence of a designated role and workplace. Since the APN position has not yet been established in Tanzania's primary health care system, distinct work positions for APNs are not recognized and available in the clinical setting. Having a designated workplace and role definition is crucial to facilitate communication and collaboration with the health care team [20].

Although many nurses in Tanzania may be practicing in a *task-shifting* role, it is not an advanced nursing practice. The *task-shifting* policy allows nurses to practice beyond their extended roles without advanced practice licensing. Nurses are trained and given certificates to handle one specific set of tasks but are not covered under Tanzanian law.

Another large barrier is the education of this cadre of nurses. There is a significant absence of doctorally prepared faculty members capable of educating students at the master's level which delays the development of the APN role. External funding sources are difficult to obtain which will inhibit the number of educational programs available in Tanzania. The government should view this as an opportunity for expanding and improving health care services toward promoting universal health coverage (UHC).

Recommendation

One of the primary strategies for meeting Sustainable Developmental Goals (SDGs) involves building local capacity in a culturally appropriate manner that increases the acceptability and sustainability of new programs. The implementation of the nurse practitioner role will help Tanzania advance toward achieving the SDGs by enhancing local access to qualified health care services that are compatible with their cultural norms. The APN role will supplement the number of providers critical to providing primary care in rural Tanzania.

The Tanzanian government has been working to improve its highly specialized medical services in order to reach international standards. The scope and quality of specialized and super-specialized services will be expanded in all zonal, specialized, and national hospitals. The goal is to eliminate the need to refer patients abroad, while at the same time introducing medical tourism to Tanzania. The APN would augment health care and provide an opportunity to allow more specialized programs to be introduced and implemented.

To facilitate the operation of educational programs, a serious increase in the number of competent and qualified faculty members will be needed to instruct this

new cadre of professional nurses. Programs need to be developed that will promote and retain APNs in the rural areas where care is most needed as well as enhance Tanzanians' capacity to create programs that are specifically tailored to Tanzania's health requirements.

Governmental support for the role and updated legislation by the Tanzanian Nursing and Midwifery council (TNMC) to promote regulation and jobs for the new nurses is critical. The 2014 TNMC Act [13] must be revisited to allow the expansion of the current advanced practice nursing role, which includes title protection, role clarity, educational ladder, supportive regulations, and payment policies. As a result, more nurses will be encouraged to remain and practice in the rural settings to reduce health care disparities. It will be an advantage for Tanzania to have another nursing specialty which holds global recognition.

This growing workforce has become integral to sustaining health care needs, especially in rural and underserved areas in many parts of the world. Although the integration of APN roles into the skill mix of health care delivery is challenging, the idea of strategic planning is fundamental to the development of roles and the planning of the workforce. The protection of the public and of patients, as well as the advancement of nursing professional standards, depends on the regulation of APN roles [21]. In order to develop an APN that delivers high quality, safe, efficient, and effective health services to patients and populations, it is crucial to apply validated advanced nursing practice models and frameworks, establish clear scope of practice standards, and embed interprofessional education. It is important to note that the APN is fundamentally a nursing role, built on nursing principles aiming to provide the optimal capacity to enhance and maximize comprehensive health care services. The APN is not seen as competing with other health care providers, nor is the adoption of their domains seen as the essence of APN practice.

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The Evolution and Future of Nurse Practitioners in New Zealand

Sue Adams  and Jenny Carryer 

Background

Aotearoa New Zealand (New Zealand) is located in the South Pacific Ocean and is of similar geographic size to the United Kingdom and Japan. It consists of two main islands, the North Island (Te-Ika-a-Maui), dominated by volcanic hills and mountains; the South Island (Te Wai Pounamu), where the Southern Alps form a mountainous backbone; and many smaller off-shore islands. The population of New Zealand is just over five million people, with 77% living on the warmer North Island, and 16.3% living rurally. There are four main ethnic groups: Māori, the Indigenous people of the land, or tāngata whenua (16.5%); European (70.2%); Pacific (8.1%); and Asian (15.1%). Just over 27% are born overseas (StatsNZ, [1]). New Zealand is a bicultural nation with the Treaty of Waitangi (Te Tiriti o Waitangi) widely considered as the founding and constitutional document. While this document guides the relationship between the Crown (in New Zealand) and Māori, Treaty rights are often not explicitly stated in legislation and therefore not enforced [2]. A recent Waitangi Tribunal inquiry (2019) highlighted breaches of Te Tiriti o Waitangi in relation to Māori health and equity; funding for Māori health organizations; pay and conditions for the Māori workforce (particularly nursing and the

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unregulated health workforce); and lack of career opportunities for Māori in the health sector. Indigenous marginalization through colonial practices and racism has resulted in grossly inequitable socio-economic and health outcomes, which persist, for both Māori and Pacific peoples [3, 4].

The Introduction of the Nurse Practitioner Role in New Zealand

In the late 1990s, a Ministerial Taskforce on Nursing [5] made recommendations to the Ministry of Health to enable nursing to realize its full potential in its contribution to the health of New Zealanders. The imperative to develop advanced clinical nursing roles, including nurse prescriber and nurse practitioner roles was central to the report. Despite some early controversy, including between nursing professional groups [6], consensus was reached with nursing leaders determining that *Nurse Practitioner* would be a new scope of practice, regulated by the Nursing Council of New Zealand (the Nursing Council) [7]. This move has been significant for the protection of the NP role, allowing ongoing regulatory and legislative changes, leading to a revised scope of practice in 2017 [8]. However, the implementation of the NP role into practice settings has remained largely ad hoc, with no national workforce policy directing NP integration.

The first NP was registered in New Zealand over twenty years ago in 2001. While the growth of the NP workforce was slow over the first fifteen years, gradual acceptance of the role together with increased funding to train NPs has seen the number of NPs double over the past four years to 630 NPs by March 2022 (Fig. 1). However, Māori and Pacific NPs are under-represented in the NP workforce, with 9% being Māori, 2% Pacific, and 79% European (Fig. 2). Addressing workforce inequity to promote health outcomes for Māori, and Pacific, is a necessary priority.

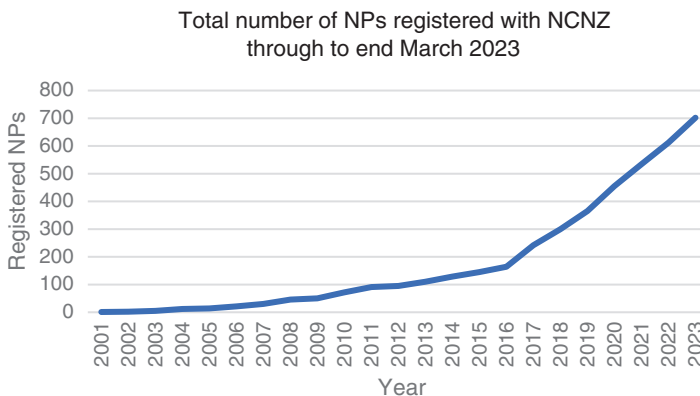


Fig. 1 The growth of the NP workforce in New Zealand)

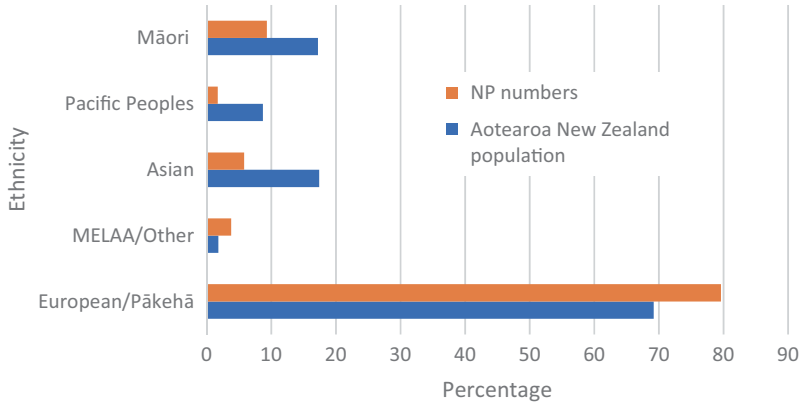


Fig. 2 The ethnicity of the NP workforce compared to the overall population of Aotearoa at the end of February 2022. (Figure reproduced from [10, p. 2], with permission)

Table 1 Nurse practitioner scope of practice in New Zealand

Nurse practitioners have advanced education, clinical training and the demonstrated competence and legal authority to practise beyond the level of a registered nurse. Nurse practitioners work autonomously and in collaborative teams with other health professionals to promote health, prevent disease and improve access and population health outcomes for a specific patient group or community.

Nurse practitioners manage episodes of care as the lead healthcare provider in partnership with health consumers and their families/whānau (extended family). Nurse practitioners combine advanced nursing knowledge and skills with diagnostic reasoning and therapeutic knowledge to provide patient-centred healthcare services including the diagnosis and management of health consumers with common and complex health conditions. They provide a wide range of assessment and treatment interventions, ordering and interpreting diagnostic and laboratory tests, prescribing medicines within their area of competence and admitting and discharging from hospital and other healthcare services/settings. As clinical leaders they work across healthcare settings and influence health service delivery and the wider profession.

NCNZ [8]

Scope of Nurse Practitioner Practice

The evolution of the role of NPs in New Zealand has been challenging, with multiple changes required to legislation, regulation, and education [7]. The result of ongoing advocacy and action has resulted in a broad and permissive scope of NP practice (Table 1). Nurse Practitioners are authorized prescribers, with access to the full New Zealand prescribing formulary, governed by PHARMAC; are able to order a full range of diagnostic tests; refer to specialists; and undertake procedures previously reserved for medical doctors, such as certifying death and issuing sick and injury certificates [8, 11]. Nurse Practitioners practice autonomously and independently

(without protocol or supervision) and increasingly are establishing NP-led services in the public and private sector to meet gaps in health service provision.

Nurse Practitioner Education

The function of the Nursing Council, under the Health Practitioners Competence Assurance Act 2003, is to protect the health and safety of the public by setting scopes of practice, qualification and competency requirements, and standards of education to ensure regulated nurses are fit to practise. To achieve registration, NPs have to be experienced registered nurses with a clinical master's degree in nursing and have demonstrated the required advanced practice nursing competencies [12]. The NP educational pathway generally takes at least four years during which the registered nurse is working clinically while undertaking part-time postgraduate study. While eight tertiary education providers are accredited to deliver an NP program, four universities produce 90% of all NPs. The final year of the master's programme is an advanced practice practicum with academic course content during which the NP trainees have 500 hours of super-numerary supervised clinical practice (either from an NP or from a medical doctor). NP trainees are supported by NP academic mentors and are required to complete case studies and objective structured clinical examinations (OSCEs). At the end of this final practicum year, the NP trainees are required to complete a portfolio demonstrating their NP competencies [12]. The portfolio is then submitted to the Nursing Council and the NP trainees are assessed by a panel of experienced NPs. As soon as NPs are registered, they can begin practice as an NP.

Growing the Primary Healthcare Nurse Practitioner Workforce

The original intent of the introduction of NPs into the health workforce was to improve access to healthcare and promote health equity [13]. However, without national strategy, NP positions were developed where the nurses themselves drove the service development, and often within acute care settings. Implementing NPs in the primary healthcare sector, dominated by physician privately owned businesses, was problematic [14]. Approximately 60% of NPs in New Zealand work in clinical settings broadly defined as primary healthcare, including general (family) practice (roughly 40%), urgent care, aged residential care, community mental health and addiction services, and local health or third sector providers serving priority, and often underserved, communities [15]. Of these, approximately 14% work rurally. Nurse practitioners in New Zealand are able to deliver comprehensive primary care services. They can enrol patients, having their own caseload (or panel) and access national and regional funding in the same way as general practitioners (family physicians). Consequently, NPs are filling significant gaps in primary care provision in both permanent positions in family practices and covering short-term general practitioner vacancies.

Positioning the Nurse Practitioner Workforce for the Future

Within New Zealand, the visibility of the NP workforce is finally gaining national attention [9]. In August 2022, the government committed to fund 100 training places per year through a national consortium of up to six universities, representing a five-fold increase in the number of fully funded NP training places since 2016. As with many countries, New Zealand is facing a severe health workforce crisis, which intensified through COVID-19, though was in the making long before. General practitioner vacancies have increased in the past two years, evidenced by advertisements for NPs that far exceeds the available workforce. The 100 training places will be inadequate by 2025 given the rising demand for NPs. Yet while this demand grows, we argue that the NP profession is at a watershed moment in history. There are decisions for the NP profession to make within a health system grappling with its future structure and direction. Firstly, how will the NP profession position their contribution to the health of the nation; and secondly, how will they inform health policy to ensure their role is successfully integrated into practice, delivering healthcare that meets the health needs of local communities.

In July 2022, New Zealand embarked on health reforms [16] following the Health and Disability System Review [17]. This followed decades of rhetoric within national and regional health policy to prioritize health and social care, particularly for Māori, to improve health outcomes. The Review stipulated the health system must shift its focus towards primary healthcare and use co-designed locality approaches to integrate health and social care services and improve healthcare access and equity. The health reforms offer a considerable opportunity for the NP workforce to work alongside local communities to design and deliver culturally safe healthcare to prioritized population groups, including Māori, and Pacific, peoples; people living with complex comorbidities; and others who are vulnerable and marginalized within society. It is in this space, where NPs work is grounded in a social justice paradigm, that the greatest gains for population health can be achieved [18–22].

The intent of the NP role in New Zealand as envisaged by nursing leadership was to identify and meet health needs of local communities by delivering a culturally safe model of healthcare that bridged biomedicine and nursing [7]. Within the primary healthcare sector, a diverse range of NP service delivery models have evolved reflective of the multiple organizational and business models in operation. Mainstream primary care is delivered by for-profit small business and corporate entities, while trust or not-for-profit providers tend to deliver services to underserved, rural or marginalized communities. It is the NPs who practise outside of mainstream primary care who are most able to work innovatively and transformationally with community groups such as youth, gender diverse, homeless, young mothers, isolated older adults, refugees, as well as people living with social and health complexity, including mental health and addiction issues. We have previously raised the importance of research that focuses on the short- and long-term outcomes of such transformative care delivered by NPs [19].

At the same time the shortage of general practitioners is leading to a pressing demand for NPs to work within those mainstream practices under a funding and care delivery model that is not always conducive to the best use of NPs' skills and philosophical approach to practice [20, 22]. The international evidence that NPs deliver at least equivalent health outcomes to family physicians and often superior health outcomes is compelling [23, 24]. The unique disciplinary knowledge of nursing, Wood [22] argues, forms the basis of NP practice and the "qualities that generate high levels of patient satisfaction and improve patient outcomes, [are] a direct result of NP led care" (p. 51). The challenge for New Zealand, and likely other countries, is whether NPs will be subsumed within the biomedical paradigm, working as substitutes for medical practitioners, or whether they will hold true to the intentions of the NP role, to deliver meaningful, culturally safe, and holistic care alongside careful diagnosis and prescribing practices [25].

Nurse Practitioners as Agents of Transformational Change

A critical next step for the NP profession in New Zealand to optimize their value and contribution is to develop frameworks for the successful integration of NP roles into primary healthcare settings. To date this has been ad hoc [14]. Barriers and facilitators have been described internationally [26] and documented in New Zealand [10, 14, 27], identifying multiple factors at play within complex settings. Attention needs to be paid to role transition, professional autonomy, teamwork and collegiality, professional development, funding and organizational systems and processes. Additionally, NPs "advocate, influence and manage innovative changes to healthcare services to improve access, equity of outcomes, quality and cost-effective healthcare for specific groups or populations" [28, p. 5]. This core competence of NP practice reflects the expected leadership skills required of NPs to work with local communities to deliver appropriate services. Given that more and more NPs are registering each year, there is an imperative to ensure that a range of mechanisms is in place locally and nationally to enable NPs to flourish at work.

The NP role in New Zealand is at a tipping point where NPs are being recognized as a potential significant health workforce. The next phase of the evolution of the NP role in New Zealand is to protect and nurture NPs as agents of transformation of health service delivery, rather than being perceived as props in a struggling system of care delivery. The biomedical model of care is not fit for purpose in the face of increasing prevalence of long-term conditions, escalating mental illness and addiction, and the known close links between poor health and socio-economic determinants. Nurse practitioners understand the complexity and interplay between health and our social world. With their relational and enablement skills, knowledge of local communities and combined nursing and medical skills, NPs are a critical resource for transforming the way primary healthcare is delivered.

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Transforming Healthcare: The Australian Nurse Practitioner Role

Christopher Helms and Leanne Boase

Introduction

Australia's land mass is vast, with a population of approximately 26 million spread across eight states and territories. The population is primarily concentrated in large metropolitan centers on the continent's coastlines. However, 10% of Australians are geographically isolated in outer regional and remote communities, which are separated from metropolitan and inner regional centers by hundreds of kilometers of aging highways and dirt roads [1]. Infrastructure supporting residents in these communities is poor, with over one-third experiencing overcrowded housing, and 75% of Australia without mobile phone or internet coverage [2]. These factors, and other critical social determinants of health mean that access to healthcare is poor in regional and remote areas, with a resulting mortality rate that is 1.5 times higher than persons living in metropolitan areas [3].

- **Reconciliation and Acknowledgment of Country** Australia is on a journey toward reconciling our collective history, by acknowledging the wrongs committed to Aboriginal and/or Torres Strait Islander persons and communities since colonization. The adverse effects of past genocide, the destruction of social and cultural structures, including local traditions upholding cultural beliefs and connection to country, as well as the ongoing effects of intergenerational trauma and racism on First Nations persons health and

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wellbeing is a real and constant threat to Aboriginal and Torres Strait Islander safety.

In an effort to address institutional racism and promote equity in Aboriginal and Torres Strait Islander health outcomes, Australia's health practitioner regulator has embedded the requirement for Cultural Safety in health practitioner legislation (Ahpra, 2022). This means that all nurses and midwives are held professionally accountable in assuring Culturally Safe healthcare in their practice and work environments.

Culturally Safe healthcare begins with understanding, respecting, and reflecting upon differences. The health and wellbeing of Australia's First Nations peoples is indelibly linked to Australia's land, seas, and skies. When opening conferences, official ceremonies, or meetings, it is customary to receive a *Welcome to Country* by an Indigenous elder. If you are a visitor to Australia, and are speaking or presenting at one of these events, an *Acknowledgment of Country* would be welcomed by Australia's First Nations peoples.

There are many ways to acknowledge country. An example acknowledgment is provided below, and should be reflected upon and delivered with meaning:

I wish to acknowledge the traditional custodians of the lands upon which we meet today. I pay respects to and acknowledge their continuing culture, and their connection with land, sea, and sky. I pay respects to those Elders and knowledge holders who may be with us today, as well as those past and emerging. These are your lands and will always be.

Australia is home to many Aboriginal and Torres Strait Islander persons and communities, who hold the histories, health traditions, and social practices of the oldest continuous culture in the world. Australia's First Nations peoples have employed effective health and wellbeing practices for over 65,000 years. However, since colonization in 1788, they have suffered from an increasing burden of disease and ill-health that has been perpetuated by genocide, the destruction of social and cultural structures, systemic racism, and the dispossession of lands with which they hold a unique and enduring spiritual connection. These factors have resulted in extraordinarily high morbidity and premature mortality, with Australia's First Nations peoples experiencing an age-standardized rate of death 1.7 times that of non-Indigenous Australians [4].

The Australian Nurse Practitioner (NP) role began in the early 1990s, with nursing leaders identifying the untapped potential of the nursing profession to holistically address healthcare gaps in these, and many other marginalized populations and contexts [5]. Since then, the role has matured considerably over the last three decades. Like many other countries who have introduced the NP role into a system traditionally governed through medical hegemony, the role has encountered barriers

to practice that are being systemically challenged by nursing leaders [6–9]. This chapter describes the origins of the Australian NP role and current workforce demographics. It then provides an overview of how nursing views advanced practice in Australia, and how it relates to the education and regulation of NPs. The funding and legislative frameworks supporting the role are described, and this chapter concludes with an overview of the future strategic direction of the role, with a discussion on how the nursing profession is seeking to eliminate practice barriers to ensure the NP workforce is working effectively, efficiently, and to the top of their scope of practice.

Origins of the Australian Nurse Practitioner Role

- ▶ **Nurse Practitioners as Disrupters** Bower and Christensen [10] first described the theory of disruptive innovation as applied to business, whereby a smaller company (the disrupter) with relatively few resources can eventually challenge a larger, well-established business (the sustaining incumbent) with substantially greater resources.

This process is accomplished over time by the disrupter focusing its efforts on products and services for a tightly defined market with lower profitability. That market has been ignored by the incumbent, in favor of products that sustain mainstream consumers, as well as more profitable markets. Eventually, as the smaller business refines and improves its products and services, it begins to expand its reach into the mainstream market with greater services. Eventually the disrupter displaces the incumbent in the mainstream market as consumers recognize the disrupter's services and products as meeting their needs. There are many examples of disruptive innovation in the industry, such as those products developed by Netflix and Apple. Importantly, the process of disruption takes *time*, and many attempts at disruption *fail due to a lack of strategic thinking and momentum*.

The theory of disruptive innovation has been successfully applied to healthcare and importantly, to nurse practitioners [11]. In the Australian context, nurse practitioners could be viewed as disrupters, noting the sustainers (medical practitioners) have recognized NPs working independently and to their full scope of practice as threats, and have implemented strategies to undermine, subsume, and control them. This is seen in the Australian context and in other countries around the world. Unfortunately, the Australian medical fraternity does not recognize that the intent of the NP role is not to replace or substitute, but complement existing workforce capabilities. This lack of foresight has meant that marginalized communities continue to struggle with access to timely, effective, and efficient healthcare in the Australian context, resulting in an unnecessarily high burden of disease and ill-health.

This section provides an overview of the historical development of the NP role in Australia. It aligns this discussion with the theory of disruptive innovation [10]. We do so because, although disruptive innovation was only first discussed at a time when the NP role was in its infancy in Australia, the concepts surrounding the theory are ultimately responsible for the role's initial successes and ongoing challenges. We feel that applying the theory of disruptive innovation to our learnings would be helpful for other countries in the early stages of role legitimization and development.

The historical origins of the NP role in Australia are well documented [12]. A series of debates, working groups, and discussion papers led by the nursing profession culminated in governmental support to fund ten demonstration projects in the state of New South Wales (NSW) in the early 1990s. The purpose of those projects was to show the added value, safety, and ability of registered nurses (RN) to practice in roles approximating that of the NP role, as described from the literature arising from the United States and United Kingdom. The medical profession at large was vociferously opposed to this body of work at the outset and had significant concerns over "nursing independence" and "doctor substitution."

Those concerns ultimately influenced the ways in which the demonstration projects were designed, studied, and reported, as well as how the role was operationalized during the first ten years of its development in the Australian context. For example, the medical profession did not want the evaluation design of the projects to be randomized controlled trials (RCT) that compared NP versus medical practitioner care, but favored projects having a descriptive study design, resulting in only two of the project sites using RCT designs [6]. The trend of favoring descriptive studies for NP models of care continued throughout the first decade of role development in Australia, and has been critiqued for their poor implementation fidelity [13], which makes it difficult to identify and compare outcomes across differing models of NP-directed care.

In addition, the projects were limited to marginalized communities and those with poor access to care, including regional and remote communities, outreach clinics for sex workers and homeless populations, and in discrete specialty areas that were underserved or undervalued by the medical profession. The projects allowed RNs working in advanced roles to "supplement" traditional medical roles by allowing them to diagnose and treat a limited range of conditions. Practice guidelines, as well as medication, diagnostic pathology, and imaging protocols were used to support autonomous practice within a narrow area for discrete health conditions, but not independent practice across a large range of conditions. Guidelines and protocols mandated by legislation that directed NP care were quite prescriptive and found to unnecessarily limit NPs from achieving their fullest capabilities [14]; they took years to abolish and had the unintended consequence of stunting the expansion of NPs from working beyond discrete specialty and subspecialty areas during the first decade of role implementation. These limitations provided assurances to medical practitioners that nurses would have a lower likelihood to serve as competitors (i.e., through substitution models) in the health-care market. Overall, the NSW demonstration projects were successful in

demonstrating RN safety and ability to implement the NP role [15], which led to other Australian states and territories developing similar projects that provided comparable outcomes [16–18]. In 1998, NSW nurses gained legislative title protection for the NP role, which was a key milestone in legitimizing and advancing the role in Australia. Soon after, legislation was changed to enable the autonomous prescribing of medicines and to practice independently. In 2000, the first two NPs were authorized to practice in a generalist remote context and in emergency nursing. Other Australian states and territories followed with legislated title protection, as well as changes to their medicines legislation in a disjointed and incremental manner.

The statements published by the media from medical unions and professional associations at the time of the demonstration projects bordered on hysteria. They demonstrated a lack of respect for the nursing profession, voiced fears of siloed approaches to healthcare, demonstrated medical non-collaboration, and frequently bordered on slander. The use of media to perpetuate medical hegemony has continued today, and is continually problematic for the nursing profession who is represented in less than 2% of media articles relating to health and health policy [19]. This is slowly changing with the advent of social media, with greater numbers of nurses engaging with the media, health consumers, politicians, and professional bodies through various platforms. Interestingly, the voices of health consumers were relatively absent during the first decade of NP role development. This has changed substantially, with greater recognition of the important role health consumers play in advocating for NPs and their ability to support community health and wellbeing.

The nursing profession quickly recognized that a professional body was required for promotion and advocacy for the NP role, and for continuing education, coordination, and collaboration among early NP leaders. The Australian Nurse Practitioner Association was established after amalgamation of separate state-based NP interest groups in 2003, and became the Australian College of Nurse Practitioners (ACNP) in 2009. Today, the ACNP has an increasing political and health policy footprint with policymakers, health consumers, politicians, and health systems administrators at a national level. It advocates for NPs working to their full scope of practice, so that all Australians have access to high quality healthcare.

In summary, the Australian NP role is on a journey toward disruptive innovation. It has its origins in, and has had its greatest impact through helping communities that are marginalized or underserved by traditional medical models of care. NPs began with tightly controlled and limited clinical scopes of practice that have evolved over time to meet dynamic population needs, which is further described in the following sections. This has allowed NPs to stay somewhat “under the radar” of medicine, and allowed them to develop a growing identity as trusted and well-regarded clinicians in the communities they serve. Health consumers are increasingly advocating for the NP role, which has resulted in Australian NPs strategically establishing themselves in mainstream primary healthcare. Nurse practitioners are not yet disruptive innovators within Australian healthcare. With time, strategic direction, growth, and perseverance, they will be.

Workforce

Since 2000 there has been a slow but steady growth of the NP workforce across all Australian states and territories. As of 2022 there were approximately 2500 NPs practicing in Australia, representing 0.01% of the total RN workforce [20]. Figure 1 below provides an overview of the total numbers and distribution of NPs in each jurisdiction, as well as their compound annual growth rate (CAGR) over a period of ten years. Workforce growth rates through CAGR or other similar measures can be used to draw inferences on the health of a growing NP workforce through time. One expects the CAGR to increase with a newly established workforce, and decline and stabilize as the NP workforce matures and saturates the market. Australia's average CAGR over its eight jurisdictions was 14% from 2010–2020. It is important to note that some jurisdictions, such as the Northern Territory and Western Australia, have smaller numbers of NPs that are distributed across large areas of land with relatively small populations. These factors may overstate the relative CAGR when comparing differing jurisdictions.

In comparison with New Zealand, which introduced the NP role at a similar time to Australia and has comparable education and regulatory frameworks governing entry to practice for NPs, the CAGR was 20% over nine years across the entire country [21]. Available literature suggests jurisdictions with legislation and policies that enable scope of practice using a right-touch regulatory approach [22, 23], with roles supported by funding that enables clinical practice [24], as well as candidacy and professional support programs (such as communities of practice [25] and well-designed clinical placements for NP students [26]), promote NP workforce growth and model of care expansion. Therefore, these are current and future strategic priority areas for Australian NP workforce development.

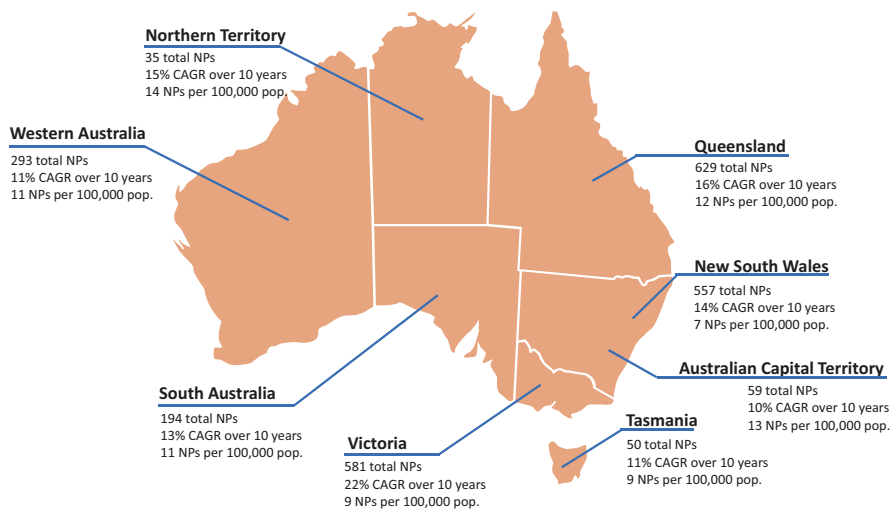


Fig. 1 Australian nurse practitioners—jurisdictional registrations (as of March 2022)

There are many factors that have influenced workforce growth in Australia. Until recently, there were no published logic models or national workforce strategies used for developing and evaluating NP models of care. This has likely contributed to a lack of strategic momentum in the development of the Australian NP workforce. In addition, jurisdictions have implemented NP policy and legislation incrementally and in a disjointed fashion, which has led to confusion about the capabilities of the NP role among nurses, educators, health consumers, governments, and the broader health professions. Unfortunately, compelling Australian research has also found that nursing itself has, at times, undermined the NP role [27]. Fortunately, Australia's NP workforce has gained momentum over the past decade, as Australia's nursing leaders have unified in their understanding and appreciation of the NP role and its value-add to broader health initiatives.

Impact of Funding on Workforce

Funding to enable clinical practice has played a significant and lasting role in the historical development of the NP workforce. Australia enjoys universal healthcare; all eligible residents have access to comprehensive primary healthcare and hospital services that are free of charge or subsidized by taxpayer funding. Traditionally, NPs have worked for public sector health departments, where healthcare for eligible residents is made freely available in hospitals and outpatient clinics run by state and territory governments. Before 2010, almost all NPs worked in the public sector. Today, approximately 72% of employed NPs work in the public sector, with the remaining working in the private sector [28]. Concerningly, not all NPs working in the public sector are employed in named positions due to various employer-related factors. Such factors include the higher costs of employment, a lack of strategic workforce planning, and an inability to fully realize the benefits of the role due to workplace-based restrictions arising from a system designed to enable medical practitioners, as opposed to NPs. For example, many NPs working in the public sector are unable to prescribe medicines or request diagnostic examinations to their full scope of practice due to poor local planning and unsupportive local policies. Recent data published by the Australian Commonwealth indicates up to 28% of NPs are not employed or working in named roles [29], and are therefore unable to practice to their full potential and contribute to health system reform.

The private sector offers a slightly different picture. In 2010, funding reforms were enacted by the Australian Commonwealth, which enabled patient subsidies for the costs of NP-directed healthcare in the private primary healthcare sector [30]. Previously, health consumers or employers in the private sector paid the full costs of NP-directed care, which limited growth in a market where care obtained from medical practitioners was oftentimes fully subsidized. As opposed to the public sector, which is financially supported by the states and territories, health consumers in the private sector receive financial subsidies from the Commonwealth and private insurers. Limitations on these funding subsidies have been differentially applied to health consumers choosing to seek care from an NP, where doctor-led care has access to a

much greater suite of subsidies for professional services, medicines, and diagnostic imaging services [31]. This was a policy mechanism enacted in 2010 by the Australian Commonwealth that was led by aggressive medical lobbying to regulate NP clinical scope of practice and reduce the ability of the NP workforce to create a competitive primary healthcare market. This policy decision has led to the unintended consequence of some private sector NPs shifting their target markets away from marginalized communities and populations to mainstream markets, who have a greater ability to pay for the costs of NP-directed healthcare [32].

The 2010 funding reforms have been one of the key enablers for NP workforce development in primary healthcare in the last decade. The costs of professional attendances (including telehealth), prescribed medicines, requested examinations (i.e., diagnostic imaging and pathology), and referrals to medical specialists are partly subsidized through these changes. Generally, due to the competitive nature of the private sector, NPs have fewer local policy restrictions governing their practice, as employers are motivated to enable their workforce to work to their fullest abilities in an efficient and effective manner. This has resulted in a growing exodus of NPs from the public sector, where they are enabled to develop innovative models of primary healthcare and demonstrate their value-add to the system. However, there are substantial limitations to the subsidy of these services [24], which continues to limit growth in the private primary healthcare sector due to ongoing NP concerns of shifting healthcare costs to health consumers.

In addition, aggressive medical lobbying in 2010 resulted in the Commonwealth government legislating the requirement for collaborative arrangements for NPs working in the private sector. Mandated collaborative arrangements do not restrict the ability of NPs to practice independently or restrict their scope of practice. However, they are required for patient subsidies for NP-directed healthcare in the private primary healthcare sector. The unintended consequences of this policy decision have disadvantaged health consumers and NPs alike, as some medical practitioners have chosen not to collaborate with NPs at the sacrifice of multidisciplinary patient-centered care, have resulted in unnecessary duplication of care and care silos, have resulted in higher out-of-pocket costs for health consumers choosing an NP as their healthcare provider, and have blurred lines of medicolegal accountability [9, 33].

Scope of Practice Considerations

In Australia, scope of practice is determined by the individual NP, their employer, and legislation. Core practice activities unique to the NP role compared to other advanced practice nurses in Australia include their ability to independently:

- assess, diagnose and treat patients;
- prescribe medicines;
- request and interpret diagnostic imaging;
- request and interpret diagnostic pathology; and
- refer to allied health and medical specialists for management.

Independent practice, as applied to the above core activities, is what differentiates the NP role from other autonomous advanced practice nursing roles in Australia. Funding for the above core activities impacts greatly upon the ability of NPs to actualize their scopes of practice in both the public and private sectors. In the public sector, NPs are limited in their ability to perform core activities required of their roles due to local and jurisdictional policy mechanisms. In the private sector, NPs are primarily limited by the scope of patient subsidies for NP-directed care versus those available for doctor-directed care. NPs in the private sector frequently self-impose limitations to their scope of practice due to concerns of unnecessarily shifting healthcare costs to health consumers [34].

The discrete populations and areas in which Australian NPs have developed their practice have resulted in a plethora of specialties. The Australian NP workforce consists of over 50 different specialty and subspecialty areas [35], with the biggest cohort working in hospital-based emergency and urgent care services. The second-largest cohort are those NPs working in primary care contexts, and include many who are working in aged care, mental health, and other generalist and specialist areas of practice [28]. From the perspective of clinical learning and teaching, the plethora of specialties has made the educational governance of NP students particularly challenging, with students in the same specialty graduating from their NP programs with considerably different clinical scopes of practice and abilities [36]. It is recognized the proliferation of differing specialty areas has contributed to issues of health consumers, service providers, policymakers, and health practitioners not understanding the true scope and capabilities of the NP role [37].

► **The Australian Nurse Practitioner Metaspecialties**

- Primary healthcare
- Aging and palliative care
- Emergency and acute care
- Child and family healthcare
- Mental healthcare
- Chronic and complex care

These issues led to empirical research that developed the Australian metaspecialties, which provide a framework for the development of NP students and their clinical scopes of practice [38]. A metaspecialty “groups specialty and subspecialty areas of NP clinical practice into broad population groups requiring similar knowledge, skills and expertise” [39]. They are similar in concept to the USA NP population foci in that they are used in a framework to describe clinical educational requirements for NP students, but differ in the fact the metaspecialties are not meant to be used in a mutually exclusive manner [40]. It is hoped as the metaspecialty framework is implemented and further developed in education programs, it contributes to a consistent and reliable NP workforce whose scope of practice is able to better evolve with dynamic health system needs.

Education and Regulation

Australian NPs are perhaps unique compared to other countries in that they are required to demonstrate an advanced level of nursing practice before they are eligible for entry into an NP education program. Advanced nursing practice in Australia is defined by a *level* of practice, and is not determined by a title, employment status, or remuneration [41]. A large body of empirical evidence has confirmed this construct of advanced practice by adapting the Strong Model of Advanced Practice to the Australian context [42–44]. A tool has been developed from this research, which can be used by nurses, employers, and educationalists to assist in determining level of practice and readiness for an NP education program [45].

Australian standards for NP educational programs were first established in 2004 [46, 47]. Education programs are at the master's degree level, and are externally accredited using national standards regularly reviewed and published by the Australian Nursing and Midwifery Accreditation Council [48]. Currently there are 13 approved NP programs of study that range from 18–36 months' duration. Eligibility for an NP education program includes the following:

- Current general registration as an RN
- A minimum of two years' full-time experience (FTE) working as an RN in an area of practice
- A minimum of two years' FTE working at an advanced level in this same area of practice
- A postgraduate qualification in a clinically relevant area

This means that most NP students hold a minimum of eight years' education and training before being allowed to enter an education program. Some feel these requirements are onerous, and have contributed to the slow development of the Australian NP workforce [49]. A review of the education and training of Australian nurses was recently conducted by the Commonwealth and promises to change the ways in which all Australian nurses are educated and trained [50]. This review and other initiatives may have an impact on how NP education programs are delivered into the future.

Once students have completed their NP education program and have accumulated a minimum of three years' advanced practice, they are eligible for endorsement as an NP through the national nursing regulator. The Nursing and Midwifery Board of Australia (NMBA) is the national regulator for nurses and midwives, and publish standards, guidelines, and frameworks on the expected behaviors, actions, and practices the public should expect from NPs to maintain a safe level of practice [51–54]. Once the individual has received the NMBA's endorsement, they are listed on a public register, allowed to use the NP title, and are authorized to practice in all Australian states and territories.

The NMBA does not regulate an individual NP's clinical scope of practice. This is primarily the responsibility of the individual, and is supported by employer

clinical governance, legislation, and/or credentialing frameworks [55]. Nurse practitioners are authorized to independently perform all core activities required of their roles through state and territory legislation. For example, they are authorized to prescribe in all Australian jurisdictions, but are prohibited from prescribing specific medicines reserved for medical specialists or for certain purposes. To illustrate, NPs are currently unable to prescribe medicines used for medical termination of pregnancy, voluntary assisted dying, or prescribe oral isotretinoin for treatment-resistant acne across all jurisdictions. Nurse practitioners can request most diagnostic imaging tests, including those that expose to ionizing radiation, although financial subsidies for requested imaging examinations are limited.

Supplementary activities are regulated through legislation and include those that NPs perform to reduce care duplication, enhance care provision, or complete an episode of care. They relate to specific authorized activities, official assessments, or paperwork required for administrative purposes. For example, driver’s license medical paperwork, workplace injury (capacity) and death certificates, and participation in the voluntary assisted dying process are all examples of supplementary activities. Nurse practitioners are currently unable to perform many important supplemental activities across Australia, with only two jurisdictions allowing NP authorization of workplace injury (capacity) certificates. Nurse practitioners are authorized to perform specific roles in the voluntary assisted dying process in some Australian jurisdictions (Table 1).

Table 1 Nurse practitioner state and territory scope of practice authorizations

	ACT	NSW	QLD	VIC	NT	TAS	WA	SA
Example Core Activities								
Prescribe Schedule 2, 3, 4, and 8 Medicines								
- Medical Marijuana								
- Medical Termination of Pregnancy								
Request diagnostic imaging								
Request diagnostic pathology								
Example Supplemental Activities								
Authorise absence from work certificates								
Voluntary assisted dying	N/A				N/A			
Authorise death certificates								
Authorise driver’s license medicals								
Authorise workplace injury (capacity) certificates			**					***
ACT: Australian Capital Territory; NSW: New South Wales; QLD: Queensland; VIC: Victoria; NT: Northern Territory; TAS: Tasmania; WA: Western Australia; SA: South Australia N/A: These territories currently do not have legislation permitting voluntary assisted dying **: A certificate can only be issued for up to seven days. ***: A certificate can only be issued by emergency department NPs for up to seven days.								

Work is currently underway to harmonize legislation across Australian jurisdictions, but this is a process complicated by resistance from medical bodies, political whim, and disjointed workforce strategies.

N/A: These territories currently do not have legislation permitting voluntary assisted dying

ACT Australian Capital Territory; NSW New South Wales; QLD Queensland; VIC Victoria; NT Northern Territory; TAS Tasmania; WA Western Australia; SA South Australia

**A certificate can only be issued for up to seven days

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Work is currently under way to harmonize legislation across Australian jurisdictions, but this is a process complicated by resistance from medical bodies, political whim, and disjointed workforce strategies.

The Future of the Australian Nurse Practitioner Workforce

To continue our journey toward disruptive innovation, and to fully enable the NP role in Australia, strategic thinking and legislative reform are essential. Our strategic priorities must address the expansion of funding models for NP-directed care, harmonize prescribing legislation, address barriers arising from legislatively mandated collaborative arrangements, resolve issues relating to public and employer understanding of the NP role, and enable supplemental activities required for the efficient and effective use of the workforce. In addition, improvements to the clinical education and training of NP students, as well as the development of a national workforce evaluation dataset are important priorities for our strategic work.

A national review of government subsidies for health services provided by NPs occurred in 2018. Recommendations for funding reform were supported by extensive evidence [56], as well as a cost-benefit analysis commissioned by the Australian government [57]. Despite this evidence, and widespread nursing and health consumer support for those recommendations, a taskforce overwhelmingly represented by medicine provided unsubstantiated and unrealistic substitute recommendations. This highlights the importance of nursing having a representative seat at the policy table, or risk exclusion. This has served as a galvanizing moment for nursing, whose various professional associations, bodies, and unions have united to push for more meaningful workforce reform. In 2023, Australia is currently finalising its very first national strategic nursing and NP workforce plans, which aim to better train and utilize the workforce, by enabling it to work to its fullest capabilities.

Unlike the USA, legislatively mandated collaborative arrangements in Australia relate entirely to financial subsidies for health consumers who obtain NP-directed care in the private sector. They do not limit the ability of NPs to perform activities required of their roles or work independently, nor do they directly restrict an NP's clinical scope of practice. They enable limited financial subsidies for prescribed medicines, requested diagnostic and screening examinations, and health services provided by NPs. The legislative requirement for these arrangements is currently being reviewed at a national level. Again, medicine is attempting to influence the outcome of proposed legislative reform relating to these arrangements, and seeks to use them to further restrict and regulate NP clinical scope of practice. If medicine is successful in its influence, it will likely have an adverse impact on the growth of innovative models of care in the private health sector and continue to serve as a mechanism to shift costs of healthcare delivery away from the government to marginalized and disadvantaged populations.

Limitations to prescribing and supplemental activities could largely be addressed in a similar manner to New Zealand. In 2018, New Zealand amended its various health acts and regulations by replacing the term "medical practitioner" with "health

practitioner.” This enabled NPs to authorize, certify, and prescribe in much the same way as medical practitioners. Undoubtedly this “right-touch” regulatory approach would be the most efficient and effective way of improving access to care in Australia. However, opposition to the NP role here would appear to make this unlikely.

Conclusion

We are on a journey toward enhancing the clinical education of NP students and normalizing the Australian NP role. We are not simply an addition to healthcare, but as an essential part of an optimized multidisciplinary healthcare team. Australian NPs are not a substitute for any other health practitioner, nor do we aim to be competitors. However, in the interests of the marginalized and disadvantaged populations we serve, we intend to be disruptors and are here to stay.

The nursing profession comprises the largest cohort of regulated health practitioners in Australia. We now speak with one voice in support of the NP role. There are established and regulated pathways for clinically based nurses to fully utilize their experience and education, and ultimately expand and extend their practice toward an even more autonomous and independent role.

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The Nurse Practitioner (NP) Role in Sri Lanka

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Abbreviations

B.Sc.	Bachelor of Sciences
ICN	International Council of Nurses
ICU	Intensive Care Unit
MOH	Ministry of Health
NCD	Noncommunicable Disease
NP	Nurse Practitioner
NTS	Nurses Training Schools
OT	Operation Theatre
OOP	Out-of-Pocket
PBS	Post-Basic School of Nursing

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PBU	Premature Baby Unit
PHNO	Public Health Nursing Officer
PPE	Personal Protective Equipment
RN	Registered Nurse
SLNA	Sri Lanka Nurses Association
UGC	University Grants Commission

Introduction

Background to Sri Lanka

Sri Lanka (Ceylon) is a beautiful island in the Indian Ocean with a land mass of approximately 65,610 square km [1]. The political system and government are democratic [2]. It is considered a lower-middle-income country [3], and the estimated current population is approximately 21 million [4]. Women's life expectancy is 78.6 years, and males' is 72 years [5]. The country possesses seven United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage sites [1].

Healthcare System in Sri Lanka

The Sri Lankan health system consists of the state and private sectors. The mainstream of services in the country, 95% of together with inpatient care and outpatient care are provided by the state sector and 50% of total ambulatory care [6]. In addition, the state/public sector provides free health services for all Sri Lankans [3]. The main administrative body for health is the Ministry of Health (MOH), and Indigenous Medicine in Sri Lanka aims to provide comprehensive and effective health services to the nation. Healthcare systems broadly address curative, preventive, and rehabilitative services [2] through a well-established system of networks through different levels of hospitals from rural hospitals to tertiary care. In addition, community health centers are located nationwide to facilitate access to care for most of the population [7]. The MOH is not limited to provide health care; it also involves in framing health policy and guidelines, developing and managing specialized medical institutions, and purchasing all medical supplies in bulk through the Department of Health Services [2]. Also they may include educational training for healthcare professionals for research and public health, including maternal and child health, communicable diseases, and etc. [8].

The private sector primarily offers ambulatory, some inpatient, and rehabilitative care with different capacities of complexity. The private sector facilities are run and financed by out-of-pocket (OOP) payments by individuals or families, and a small amount of private health insurance plans cooperate with employers. In recent years, OOP expenditures have increased dramatically and stood at 51% of current health expenditures [6].

History of Medicine and Nursing in Sri Lanka

Historical evidence shows that the Buddhist monks in the fifth century performed medicinal practices and had institutionalized training with hospitals called “Halls of Care.” This was mainly to provide care to sick monks. Buddhism influenced the country’s ancient kings to establish hospitals for sick people, primarily to practice and develop the traditional “Ayurveda” (traditional indigenous medicine). From 437 to 346 B.C., there is some evidence of the existence of hospitals and maternity homes for the community called “Sotti Shala and Sivica Shala” [9]. In 1505 Sri Lanka was colonized by the Portuguese, providing evidence of the introduction to Western medicine. This influenced Sri Lanka’s healthcare system significantly, and Western medicine became the primary practice in the country under the state [2]. The effect of the undertaking of Western medicine in Sri Lanka influenced the establishment of institutionalized nursing education [10].

Developing Professionalism in Nursing and Education Milestones

Sri Lanka obtained independence from British rule in 1948 [11]. The colonization of the Portuguese (1505) and the British Ceylon period (1815–1948) resulted in the initiation of traditional Western medicine, and it positively influenced the establishment of institutionalized nursing education [9]. Formal nursing education is essentially hospital-based/clinical oriented that was initially spearheaded by an apprenticeship modeled from the British nursing tradition. The first nursing school was established in 1939 as the School of Nursing in Colombo. This led to the development and entrenchment of another 16 Nurses Training Schools (NTS) (NTS—Anuradhapura, Ampara, Badulla, Batticaloa, Galle, Hambantota, Jaffna, Jayawardanapura, Kalutara, Kandana, Kandy, Kurunegala, Matara, Mulleriyawa, Ratnapura, Vavuniya) [10, 12]. These educational institutions provide 3-year diploma-level nursing education. NTSs follow a national-level curriculum which includes significant subjects such as medical-surgical, psychiatric nursing, pediatric nursing, and maternal nursing. Most diploma nurses will integrate into the government healthcare system as they were attached to the Ministry of health based on pre-registration for nursing [12]. In addition, the Post-Basic School of Nursing (PBS) in Colombo further supports continuing nursing education in specialized areas. It also provides training programs about teaching and supervision and management for qualified nurses [13].

Establishment of Undergraduate Nursing Education

In 2005, the first conventional university-based Bachelor of Sciences (B.Sc.) (Honors) in Nursing program was established at the University of Sri Jayewardenepura. This is a 4-year program for nursing undergraduates. The

selection criteria differ from the normal process of recruiting nurses from MOH. If secondary school graduates want to apply for a government university nursing program, they should follow the biology stream and meet the required Z-score values [14] for university entrance. The selection is made through the University Grants Commission under the Ministry of Higher Education. However, the nurses recruited by MOH were based on a certain amount of Z-score value and an interview by selected NTS. The B.Sc. nursing curriculum was enriched and advanced through subject matter experts and other relevant stakeholders. Currently, five conventional universities offer the B.Sc. in Nursing: The University of Sri Jayewardenepura (2005), the University of Peradeniya (2006), the University of Ruhuna (2008), the University of Jaffna (2006), and the Eastern University (2006). The nursing faculty may attach to the faculty of medicine, healthcare sciences, or the faculty of Allied Health Sciences. One more degree-offering faculty started recently at the University of Colombo has uniqueness as it is the only nursing faculty in Sri Lanka [12, 14]. In addition to these six state universities that offer a 4-year undergraduate nursing program, two other institutions offer B.Sc. (Honors) programs: Open University, Sri Lanka, and the General Sir John Kotelawala Defense University [14]. Open University is the first institution, starting in 1994, which provides the B.Sc. Degree for diploma-qualified government nurses to preserve their higher education [13]. In addition to these universities, some private institutions offer B.Sc. in Nursing in Sri Lanka. There needs to be a well-established policy or guideline to rank these different systems-oriented graduates [14].

Recruitment and Credentials in Nursing Sri Lanka

Formal nursing education and licensing as a Registered Nurse (RN) are essential qualifications to work in the state healthcare system. The Sri Lanka Nursing Council is the formal body to provide credentials as a RN [14] and Registered Midwife (RM). This is only offered for the nurses who obtained their diplomas or degrees from government-sponsored institutions, and these nurses could be either NTS diploma holders or B.Sc. graduates from conventional universities recognized by the University Grants Commission (UGC). However, the B.Sc. graduates should have completed a 6-month orientation and coordination course before being permitted to work as a hospital staff nurse from NTS. They also need to obtain formal appointment letters from the MOH since they were not pre-registered to the MOH, Sri Lanka. Sri Lanka Nurses Association (SLNA) was established in 1943 to get professional membership for nurses who work as RN. This council also advocates enhancing professional nursing practice, nursing standards, and support for preventing ergonomics from improving nurses' working conditions. It is also affiliated with the International Council of Nurses (ICN) [15].

However, recruitment and credential are different for nurses in private healthcare settings. These nurses recruit and train by the employer based on their vocational requirements, and there are no general standardized recruitment or credential criteria for them. Still, they are not eligible for RN certificate from the Nursing Council

in Sri Lanka. However, some accredited private hospitals have their own standardized, individualized nurse practice with adequate qualifications. In addition, some short-term specialized foreign pieces of training, such as wound care management, ostomy care, bariatric surgery, bone marrow transplant, etc., are sponsored by private healthcare institutions.

Nurse Practitioner Role in Sri Lanka

The backbone of the Sri Lankan healthcare system is nurses. They play a significant role in curative, preventive, health promotive, and rehabilitative care in health in both curative and community care settings. However, there is no defined role of a Nurse Practitioner (NP) in the Sri Lankan healthcare setting. Most practicing nurses in government healthcare contribute to direct patient care [16]. Nurses and midwives who work in primary care settings consistently achieved good health indicators in the past years. However, changing disease patterns and subsequent disease burden signifies the necessity of changes and modifications in nursing education and healthcare delivery [17]. MOH, combined with NTS and the Faculty of Medicine, has conducted short-term specialized training for RN with more than 2–5 years of experience, such as 6-month operation theatre (OT) training, intensive care (ICU) training, premature baby care unit (PBU) training, midwifery training, etc. Then they can register as a specialized training nurse such as midwifery nurses, OT nurses, ICU nurses, etc. Furthermore, the MOH has introduced a promotion-based training program conducted by PBS. Only RNs who have worked in government hospitals for more than 5 years can apply for these types of training to be nurse managers (ward sisters), nurse educators (tutors), and public health nurse managers (public health sisters). The total training period contains 18 months of theory and practice, including a 6-month midwifery course for female nurses and 6-month psychiatric training for male nurses [9].

The higher education institutes of nursing, which provide bachelor's in nursing degrees, provide some courses like basic statistics, scientific writing, and research methodology that are helpful for nurses to be competent in scientific research. In addition, the first and only master's in a nursing program approved with the requirement of Sri Lanka Quality Framework (SLQF) guidelines is in progress. However, no formal published evidence is available for this, as it was proposed and approved during 2019–2020. This will be another turning point for Sri Lanka nurses to select some specialized fields and contribute to the nurse practitioner concept in the upcoming years.

In 2017, MOH recruited specialized nurses to the community healthcare centers (wellness centers) around the country as public health nursing officers (PHNO). Initially, 100 RNs with two government hospital experiences were enrolled as a pilot project. These nurses have individualized rights to prescribe pain medications, wound care, ostomy care, and noncommunicable disease (NCD) management [18]. In the future, these PHNOs will be community nurse practitioners. However, the process will be postponed for the next 2 years.

Challenges and Issues

Access to resources and standards of nursing services, lack of evidence-based practice, challenging nursing higher education during the pandemic, severe economic breakdown, and poor access to information technology and digital health are some challenges and issues in the Sri Lankan setting. Medical supplies, like personal protective equipment (PPE), were scarce during the COVID-19 pandemic in Sri Lanka. Like in many countries, there was significant nurse burnout and turnover rates which resulted in some recent issues and challenges in clinical practice. These equally affected nursing students as they had poor access to the internet during their participation in online classrooms. They lack of well-designed virtual reality or simulation-based training which could have helped during the pandemic for their clinical training. High technology-based teaching is a challenge for the future education as Sri Lanka has been under severe economic collapse in 2021 and 2022. The effect of this economic and political crisis is still in progress, recording a high inflation rate. This also directly affects medical supplies and people's health, as children and adults are at high risk of malnutrition.

Evidence-based nursing is another big area for improvement. To improve patient reported outcomes, nurses may need to learn and improve their research skills to integrate decision-making into patient care and knowledge development in nursing practice. International collaboration and guidance for standard nursing practice and updated nursing education are other aspects that nurse educators and managers need to address in Sri Lanka.

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Advanced Nursing Practice in the Kingdom of Saudi Arabia

Siobhan Rothwell

Introduction

The Kingdom of Saudi Arabia (KSA), founded in 1932, has a recorded history of nursing which precedes this date by hundreds of years [1]. Rufaida Al-Asalmiya, born around AD 620, was the daughter of a physician, is considered to be the first Islamic nurse, and was a companion to the Prophet Mohamed (PBUH) [2, 3]. She, among other women, provided basic care and support during the Holy Wars and in peace time, and was instrumental in the evolution of nursing care (Al-Osimy, cited in [2]). This evolution included the founding of a nursing school to teach nursing skills to other women, engagement in social care for those afflicted with disease, and particular commitment to the support of orphans and older persons. This noble contribution to the sick, to healthcare, and to the education of women has been largely forgotten and deserves mention in the discussion surrounding the global evolution of nursing [3].

Saudi Arabia, situated on the Arabian Peninsula is the largest country in western Asia, with a population of over 36 million people [4]. A country that was nomadic in nature has now become more settled since the discovery of oil in the 1930s [5]. Over 87% of the population is now urbanized and spans from the west of Eastern Province to Mecca and Medina [5].

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Nursing in Saudi Arabia

The global evolution of nursing, notably the advanced practice nurse (APN) role has been in response to patient and healthcare needs [6]. The benefits and challenges of the role have been well documented since its inception, particularly centered around the patriarchal nature of healthcare and medicine as well as barriers at the system level [7–10]. Despite early pride in the profession in the time of Rufaida Al-Asalmiya, nursing in KSA, in and of itself has struggled to have the profession viewed in a positive light [11]. Respectability, or lack thereof, related to social and cultural factors, has meant it has been difficult to recruit and retain, particularly females, to the profession of nursing [12, 13]. The heavy reliance on expatriate nurses has been multifactorial, but primarily due to rapid expansion of the health services in KSA in the 1980s and lack of local capacity or skill mix to support this effort [14].

A Royal Decree in 1992 introduced the concept of Saudization, a process to increase the number of Saudi nationals into the workforce [1]. According to *The Statistical Yearbook*, published by the Ministry of Health (MOH) in 2020, 43% of the nursing population were Saudis, an increase of 6% since 2016. [15]. This illustrates some effort to increase the number of local nurses as the dependency on expatriate healthcare workers is tenuous given risks associated with international relations, local disasters, and, as has been seen recently, global pandemics [16]. However, there is still concern regarding the Kingdom's ability to increase the local workforce within the healthcare system to meet the 2030 goals [17].

In recent years, shifts in cultural norms have begun to change the face of KSA. In 2016, the Kingdom published Vision 2030, a blueprint of strategic objectives which aims to develop the country socially and economically with a specific focus on government accountability, transparency, and modernization [18]. Among a number of strategic objectives, the health of the nation is considered paramount and emphasis has been placed on enhancing hospital care as well as preventive medicine and the development of the primary care sector [18]. There is an urgent need for further investment in infrastructure, human resources, and technology, as well as medical and nursing education to increase the number of Saudi graduates to achieve the goals as outlined in Vision 2030 [19]. Improving access to healthcare services, a catalyst for the evolution of advanced practice internationally, has been seen as an opportunity to initiate the formal development of the APN role in the Kingdom [20, 21].

Advanced Practice Nursing in Saudi Arabia

Madrean Schober [22] describes the impetus required to drive APN role development which also needs to consider local context. This should include healthcare needs, skill mix, workforce issues, the need to advance the profession, and improve access to healthcare. These issues exist in KSA, and with a projected increase in population, improvement in life expectancy, increases in chronic illness, and inadequate hospital capacity and primary healthcare facilities, the healthcare needs in

the Kingdom will continue to rise [19, 23, 24]. As in many other countries, physician shortages also exist [25]. However, given the issues with recruitment and retention of registered nurses, the question is asked whether now is the time to develop the APN role [26]. Hibbert et al. [21] propounded the need for a culturally sensitive APN model in line with international guidelines while acknowledging the need to increase the number of highly trained graduate nurses. The issue of APN role perception among the healthcare community and policy makers as an identified barrier needs to be addressed, and given the variation in understanding and regulation of the role, this could be a significant challenge to overcome [27].

The provision of advanced nursing education is considered to be a conventional starting point in the development of the APN role [22]. Master's programs are considered the minimum level of education for advanced practice given the complexity of the role with respect to decision-making, responsibility, and accountability [28]. In 2013 a collaborative relationship emerged between Dublin City University (DCU), Ireland, and Princess Nourah bint Abdulrahman University (PNU) in Riyadh, KSA. This collaboration saw the establishment of the first master's program for advanced practice nursing in the Kingdom, delivered by DCU in PNU and which commenced in 2017. Other universities in KSA started APN master's-level programs in 2022 while an advanced nursing practice diploma program has been established by the Saudi Commission for Health Specialties (SCFHS) [29].

The ICN puts forward the need for country-specific regulatory mechanisms which provide legislation and policies to support the authority required for the APN role, including the protection of the title [28]. Currently there is no legal framework in place in KSA [26]. Graduates of the DCU/PNU master's program as well as APNs who have graduated from universities overseas and work in advanced practice roles within their organizations, do so under local policy. This is not a new concept in KSA, given that there is no nursing scope of practice for generalist nurses [30]. The SCFHS regulates nurse classification and registration with respect to their education, but their scope of practice is dictated by the organization within which they work [30].

Currently, in KSA the advanced practice nurses and those undertaking the specific clinical component of their education are based in a variety of specialty areas which include family care in primary healthcare clinics as well as in-hospital roles in emergency care, oncology, organ transplantation, cardiology, bariatric surgery, pre-operative clinics, colorectal, pelvic floor, pediatric care, and pain management. The APNs work in collaboration with the multidisciplinary team and are undertaking what is considered traditional roles of the advanced practice nurse including advanced physical health assessments, clinical decision-making with regard to treatment plans, diagnoses, health promotion, and patient and family education. They also have privileges, such as ordering diagnostic investigations such as blood tests and radiological tests and the prescription of medication which vary in detail according to agreed local policies. While this is seen as a positive step in role development at the organizational level, it is important to note that there must be a move toward national regulations in KSA to facilitate the protection of the patient, the practitioner, and the organization [31–34]. KSA also lacks

an independent nursing regulatory body to oversee the practice and development of the profession [26]. Currently the SCFHS is advised by a number of departments within the Commission—the Nursing Department, the Nursing Scientific Council, and the Council of Professional Nursing Practice, all of whom report to physicians [16, 35].

Next Steps

There is no internationally agreed upon starting point for initiating the APN role [22]. However, once a start has been made, it is vital that all the necessary components are addressed. With the increasing availability of APN programs in KSA, it is now time to move to the next step in role development. There are over 160 graduates from the DCU/PNU advanced practice program to date who await the advancement of the APN initiative, and more graduates are expected. Robust undergraduate programs with access to specialty graduate programs is essential to grow the APN role within the Kingdom [26, 36]. This will provide for the development of more career pathways which can impact the public image of nursing and thereby contribute to the retention of nurses once qualified [16]. There is a critical need for the creation of legislative regulation including scope of practice, appropriate and standardized education programs, protection of the APN title, credentialing and privileging, and competency-based practice as undertaken internationally [28, 37–39]. Consideration also needs to be given to appropriate remuneration by addressing how APNs should be classified according to their advanced training and levels of responsibility within the role [40]. Indeed, current online advertisements from companies in KSA looking for ‘nurse practitioners’ offering low remuneration and vague job descriptions lead to concern about how the role is perceived and who will ultimately benefit. The global experience has highlighted not only the benefits of the APN role across healthcare, but it has also provided a roadmap for the MOH and the SCFHS to develop supportive legislative and regulatory processes to set professional standards, scopes of practice, and competencies which will contribute to the quality of care as well as safeguards for the public and the practitioner [6, 28].

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Why Pakistan Needs Advanced Nurse and Advanced Midwife Practitioners

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Background

Advanced Practitioner Nurses and Midwives are the registered nurses and midwives with additional specialized experience and short-capacity-building trainings. They are capable of examining, analyzing, diagnosing, admitting, and discharging patients with undifferentiated health problems [1]. Globally, advanced nursing practice has arisen in response to the demand for enhanced services and results for specified priority groups, increased access to treatment, shorter wait times, and cost control in health care [2].

According to the International Council of Nursing, APNs are defined as “A registered nurse who has gained the skilled knowledge, tough decision-making skills and clinical abilities for prolonged practice, the elements of which are designed by the framework of the country in which they are granted for practice” [3].

In Pakistan, the rising demand for high-quality, expensive health care services has placed a significant burden on health care delivery regardless of level of treatment. The brain drain of health care workers and scarcity of general nurses and midwives are becoming more evident as the country is unable to offer adequate remunerations to these professionals. Furthermore, having no formal title for serving their roles brings significant impact on their incomes. A non-supportive regulation for titles is also a major hindrance. The people, particularly women, children, and the elderly in poor communities, believe that they need universal health coverage [4].

Despite the fact, literature has shown that APNs have considerable impact on health care quality and improvement in systems [4]. Pakistan’s health care system

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places an extreme demand on APNs to create an effective system and address the country's health care needs. There are three primary reasons why Pakistan needs the Advanced Nurse and Advanced Midwife Practitioners:

- (a) Poverty, heavy population, and high number of vulnerable people
- (b) Challenging physical geographies, from high mountains to vast deserts
- (c) Natural and anthropogenic disasters

The brief descriptions of the aforementioned reasons are as follows:

Poverty, Heavy Population, and High Number of Vulnerable Population

Poverty has been a common challenge for all countries, affecting the health deprivations. The current population of Pakistan is 230,674,750. About 100 million people are driven into extreme poverty each year because of out-of-pocket spending on health. The World Bank (WB) estimates that poverty in Pakistan has increased from 4.4% to 5.4% in 2020, with over two million people having fallen below the poverty line. Using the lower-middle-income poverty rate, the WB estimated that the Pakistan's poverty rate stood at 39.3% in 2020–21 and is expected to continue at 39.2% in 2021–22. Due to the heavy population, 40% of households in Pakistan [5] experienced moderate to severe food insecurity, which influences the global health deprivation.

Despite global efforts, health inequalities remain widespread in developing countries. In Pakistan, the maternal mortality rate (MMR) is 186 deaths per 100,000 live births, with around 251 fatalities per 100,000 live births due to pregnancy-related complications, such as excessive bleeding after childbirth, infection, or unsafe abortion [6]. Only 33% of women receive postnatal care within 6 weeks of childbirth. Similarly, the infant mortality rate (IMR) in Pakistan is exceptionally high, at 60 per 100 live births [7]. In Pakistan, almost 40% of children are stunted and 18% are wasted under 5 years of age [8]. Furthermore, approximately 53,000 children die from diarrhea and 91,000 from pneumonia every year in Pakistan. Given the prevalence and severity of health deprivation in Pakistan, a growing body of literature has sought to explain the factors of health deprivations [9]. The epidemic interrupted health care and stretched countries' health systems to their breaking point in 2020. The COVID-19 pandemic has the potential to stop two decades of global progress toward Universal Health Coverage. Poverty and health care are inextricably linked. Poor socioeconomic conditions (illiteracy, hunger, poor sanitation, etc.) result in high mortality and morbidity, affecting people's overall health. As a result, there is a need for poverty-reduction strategies. The eastern Mediterranean region has introduced the concepts of the community-based initiative Basic Development Needs (BDN). Intersectional arrangements at the operational level can be used to establish a connection with nursing. A nurse can thus be a part of the BDN support team and can not only provide health and social services but also

participate in the development of the community [10]. This has amplified the urgency of accelerating efforts to develop robust and resilient health systems to make progress toward Universal Health Coverage (UHC).

To achieve Universal Health Coverage (UHC) in low-income populations, countries must develop comprehensive action plans. Universal Health Coverage (UHC) means that all individuals and communities have access to the health's services without risk of financial hardships that includes the full range of essential and high-quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care throughout their lives. These services must be supplied by competent and skilled health and care professionals with the right mix of abilities at the institutional, outreach, and community levels, and they must be distributed, receive adequate support, and have respectable jobs. The provision of these services necessitates adequate and competent health and care professionals with an appropriate skill mix at the facility, outreach, and community levels, who are equally dispersed, adequately supported, and have decent working conditions. By concentrating on people's needs and choices, a primary health care (PHC) approach can help countries equitably maximize the level and distribution of health and well-being (both as individuals and communities) [11]. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) jointly documented a vision for PHC in the twenty-first century that combines three core components: multisector policy and action; empowered people and communities; and primary care and essential public health functions as the core of integrated health services [12]. By combining these three components, PHC establishes the framework for the achievement of UHC and the health-related sustainable development goals (SDGs) [13].

Many poor countries provide good coverage of their territory with health facilities but have limited access to services, because facilities lack the personnel required to function normally.

There are numerous examples of developing countries that have a good network of health care facilities yet limit access to treatments due to a shortage of staff for the facilities to function properly [14]. Half of the world's population lack access to basic health services, including sexual and reproductive health care. Leaving no one behind requires attention and action to the needs of women, adolescents, and the most vulnerable and marginalized.

Challenging Geographies from High Mountains to Spread Deserts

Pakistan lies at the epicenter of a highly volatile geopolitical region, with multiple decades of conflict within the country and along its borders [15]. More than 90% of the seven million deaths in children under the age of five occur in only 40 countries, with most of the mortality occurring in a few South Asian countries. Health planners have been interested in geographic variation [16]. Pakistan, the world's seventh most populous country, has made economic development but is struggling to find a route to the SDGs. The health and population characteristics in the northern and

many challenging areas of Pakistan are high fertility, low life expectancy, a young age structure, high maternal and child mortality, high incidence of infections and communicable diseases, and a wide prevalence of malnutrition among children and women. The country is unable to offer adequate health care providers toward the challenging geographies and a demographic transition because of which it faces not only the challenges of health care systems but also the increased burden of non-communicable diseases [17–18]. A challenging geographical area creates difficulties but provides an opportunity to gain experience by being creative, taking initiative, and being resilient in addressing emergency cases. Nurses and midwives have an integral role in providing high-quality health care, especially in the far-flung regions where they may be the primary care provider in their community [19].

In addition to a lack of prioritization of care and significantly limited resources for sexual and reproductive health of adolescent girls and women, these challenging geographies require nurse and midwife practitioners.

Natural and Man-Made Disasters

Natural disasters such as earthquakes, epidemics, and pandemics, and recent floods, have affected 33 million people, approx. 16 million children, and resulted in an estimated 1596 deaths (July to September 2022). During the recent flood disaster, an estimated 4000 children, 650,000 pregnant women, and 73,000 births are expected, while one million homes are damaged and the risk of gender-based violence increases [20–26]. The data is an estimate, whereas death, destruction, and displacement are tragedies to the lives of women, young girls, and children in general, and during disasters. Working as a nurse-midwife during various disasters (earthquake, pandemic, flood) and leading teams from Kashmir's earthquake to COVID-19 pandemic to flood related disasters, many challenges were encountered such as highly compromised sexual and reproductive health services and rights (SRHR); severely lacking emergency obstetric services; gender-based violence and sexual assault; missing of young girls and children from parents; lack of menstrual hygiene and other physical hygiene; spread of malaria, Gastro-Intestinal diseases, and other infections; stark deficiency of nutrition supply for pregnant and breastfeeding women and young girls; maldistribution of resources or storage of resources by some powerful personalities; lack of inexistences of access to health care facilities or health care in general, displacement trauma and exposure to harsh environment creating immense physical, emotional, and mental traumatic experiences; lack of awareness about any policies regarding women and children, or priorities to deal with during and post-disaster survivors.

A few studies to learn more about the calamities and their impacts, with the goal of producing a standardized maternal health dataset for use in Pakistan and developing nations are required. There is lack of awareness about policies pertaining to women and children, or priorities for dealing with victims during and after crises; lack of access to health care facilities or health care in general; displacement trauma

and exposure to harsh environment cause tremendous physical, emotional, and mental traumatic experiences.

The study shows that the needs of Pakistani women, young girls, children, and nurse-midwives (NMs) after disasters that population and health care providers acknowledged the need to learn about the consequences of post-disaster survivors as their own feelings and dilemmas that reveals the magnitude and effectiveness of disasters [27]. However, they expressed lack of knowledge and abilities to manage a burdensome task, questioned the health system in disaster, and reported disappointment, grief, and powerlessness with the lack or absence of policies and effective disaster measures. Short-term volunteer and facility-introduced solutions hindered nurse-midwives' efforts to help themselves and survivors.

During the disaster, nurses and midwife practitioners used a variety of situation-specific strategies, including (a) prioritizing care based on who needs emergency obstetric care and who needs routine SRH services and who needs rights protection; (b) attempting to remove or minimize vulnerability within the displacement or camp location, such as providing privacy; preventing abuse; monitoring young girls, children, and women (pregnant and breastfeeding women); (c) endorsing for the non-separation of laboring women from their families, particularly from their husbands and children; (d) helping children not to be separated from their parents; (e) assuring safe care by NGOs or people known for child care to those who lost their parents; (f) providing with team who would extend humble and respectful care; (g) advocating for distribution of benefits on an equal basis, particularly for women, children, and young girls who are the most vulnerable in such circumstances; (h) spending time with the team during emotional outbursts, crying, and emotional trauma, and (i) resolving problems while advocating for patients and their families. Some of the challenges are described in the literature [19–20], but post-disaster trauma care remains unfold. All the above strategies would be impossible to implement without the assistance of advanced nurse and midwife practitioners.

The term “nurse practitioners” (also known as Advanced Practice Registered Nurses) comprises four roles that encompass advanced practice nursing: nurse midwives, nurse anesthetists, nurse practitioners, and clinical nurse specialists. Graduate degrees are required for all four roles to qualify as a practitioner [28]. Nursing has developed in Pakistan over the last 25 years, whereas strong midwifery practitioner models have existed for the last seven decades. Nursing begins with a 3-year diploma and continues to undergraduate and graduate programs. The country established a 2-year bachelor's degree for nurses in the early 1990s, with a 3-year diploma and a 1-year specialty diploma in any nursing discipline. Nursing leadership soon realized the significance and need for an internationally recognized 4-year undergraduate program. The 4-year undergraduate degree was introduced in the country in the late 1990s to improve patient care and career pathways in the profession. A master's degree and a doctorate in nursing were offered a decade ago to encourage nurses to succeed in educational and clinical leadership and research. Today, nurses in Pakistan aspire for the highest nursing degree in the profession. Similarly, midwives are now obtaining undergraduate degrees, and this curriculum is now available through the university.

Prior to the country's independence, Pakistan recognized midwifery as a profession in the early 1900s. In Pakistan, there are three types of midwives: nurse midwives, registered nurses (RNs), and registered midwives (RM). Almost 90% of registered nurses also have midwifery training. Another cadre is the community midwife, who has completed 2 years of midwifery practice and holds an RM designation. The final cadre is that of a Lady Health Visitor (LHV), who completes 2 years of studies at Public Health schools, including 1 year of midwifery and 1 year of public health, and has a Lady Health Visitor designation and begins a private maternity home or practices domiciliary midwifery. A 2-year undergraduate degree known as post-RN Baccalaureate Studies in Midwifery already exists for registered nurses. Aside from obstetricians, midwives are the best qualified health professionals to provide maternity and newborn care. The Pakistan Nursing Council (PNC) is the governing organization for nurse education and licensure in Pakistan.

Admission criteria for nursing and midwifery

Field of study/degree program	Duration	Specialties/fields
Diploma in Nursing	3 years	Registered Nurse (RN)
Diploma in Midwifery	1 year	Registered Midwife (RM)
Diploma in Community Midwifery (CMW)	2 years	Registered Community Midwife
Lady Health Visitors (LHVs)	2 years	Registered LHV
Post-RN BSN	2 years	Registered Nurse (RN)
Bachelors after Post-RN	2 years	
Direct Bachelor of Science in Nursing (BScN)	4 years	Registered Nurse
Master of Science in Nursing	2 years after BSN to MSN	Add in License MSN
Doctoral Degree (PhD)	3 to 5 years	Add in License PHD

Role of Nurses, LHVs, and Midwife Practitioners at Rural Health Settings in Pakistan

The Pakistani health care system is developing, and since the last few years it has worked hard to enhance the quality of health care delivery and has implemented numerous reforms [29].

The creation of Basic Health Units (BHUs) and Rural Health Centers (RHCs), participation in the Millennium Development Goal (MDG) program, the introduction of Public-Private Partnership (PPP), and the development of vertical programs are the key successes to Pakistan's health system [30].

The state provides health care through a three-tiered system of primary, secondary, and tertiary level health facilities [31]. The majority of PHC facilities are fully equipped with public health workers in Basic Health Units, which include Lady Health Workers (LHWs), dispensers, midwives, and Lady Health Visitors (LHVs) who are primarily responsible for health promotion, disease prevention, and pre-referral treatment to the population in their catchment areas, particularly in Pakistan's rural areas. Secondary health services are given by tehsil hospitals and

district hospitals, which are staffed with a small number of specialists doctors, medical officers, and nurses, whereas tertiary care is provided by teaching hospitals.

The same three-tiered health delivery method is used in Pakistan's Gilgit-Baltistan region, though due to limited access, hard terrain, and harsh weather in the region, health care human resources are a major constraint in providing health services. Thus, an LHV/Registered Midwife working in health facilities or field health units, particularly for mothers and children, is the first point of contact for the people in this region. LHVs/RMs serve the community as practitioners by offering pre-referral therapy and liaison with the region's next level of care facilities.

According to Pakistan Nursing Council (PNC), the midwives are responsible to provide counselling and educating women, families, and the community about health issues. She is able to keep an eye on the families' social, psychological, and physical health during the entire childbearing cycle. This makes them potential to independently practice their key competencies while also assisting the community [32].

Contribution of LHV/Midwives/Nurse in Improving the Health Indicators

The supply of future health care to attain effective health care is a global challenge. RMs and LHV RMs serve in a range of capacities in Pakistan's public and private health settings, including non-governmental organizations (NGOs) such as the Aga Khan Health Service, Pakistan (AKHS, P), a leading non-profit, non-governmental, and non-denominational community-based organization that provides quality maternal and child health services throughout Pakistan. This NGO established the LHV RM-led maternal and child health facilities in 1974 as a strategy to combat the increasing rate of maternal and child mortalities, particularly in Gilgit-Baltistan, Chitral, and other rural areas of Pakistan. This has a significant impact on reducing maternal and child mortality. It was followed by the establishment of a comprehensive community-based primary health program in which LHV midwives played a key role as facility-based health professionals as well as in mobile teams in ensuring the program's success in accomplishing its goals. Midwives' role to decreasing the trend of mortalities is noteworthy, as IMR was 158/1000 live births in the baseline survey and MMR was more than 500/100,000 live births, which were reduced to 19/1000 and 39/100,000, respectively, in the program survey population [33].

Why Pakistan Needs Advanced Nurse and Advanced Midwife Practitioners?

The function of the nurse has evolved over time in response to advancements in knowledge of science and changes in health care needs [34]. Midwives, LHVs, nurse-midwives (NM), and, more recently, community midwives (CMWs) have

traditionally provided community-based preventative and routine care to women and children at a minimal cost. Prior to Universal Health Coverage (UHC), these cadres were delivering care to poor residential areas, villages, and in challenging environments. Throughout the crisis, they have always been the first caregivers. The inhabitants of many geographical mountainous/challenging region have received care while no one is there, ranging from severe landslides in high mountains to plains or deserts where walking is impossible during the summer due to heat.

Furthermore, they are the voice for women and children who cannot speak. When childbearing women need relief with problems or referrals, they advocate for their families. During COVID-19, when governments shut down all maternity and child-led health care facilities, they were a major advocate; they reached out to these groups and offered good antenatal, intranatal, and postnatal care, as well as continued breast feeding and vaccination [35].

These cadres also provided prophylactic health care, such as vaccinations, well-baby and mother clinics, and the delivery of supplements for nourishment during and after pregnancy. The introduction of APN into the health care context will improve the outcome of health care delivery since APN improves the patient's journey, helps to have better-informed patients, and facilitates patient-centered treatment. APNs also promote communication between patients, patient's families, and multidisciplinary teams.

Gradually, Pakistan nurses and midwives are working with doctors and starting from post-diploma program at preventative sites and the plan is to advance these programs at Advanced Practitioners level. Currently, a group is working on post-graduation of diabetic diploma in which both nurses and midwives will be trained.

Way Forward

In Pakistan, like many developing countries, nurses and midwives continue to battle for recognized legal title with a defined scope of practice for advanced practice. Competencies in the respective fields and legal approvals at national level are required. Despite the fact, the nation acknowledges advanced practice and prescription; it will always be challenged since it lacks legal standing.

The nurses and midwives have already proposed the revision in the act of the regulatory body, which has been sent to Parliament and the Senate for approval. The Advanced Practitioner Registered Nurses (APRN) Consensus Model: License, Accreditation, Certification, and Education (APRN Consensus Model) is a unified model of regulation for the future of advanced practice nursing that is intended to align the interrelationships between licensure, accreditation, certification, and education (LACE). Adopting the Consensus model benefits not only the nursing profession, but also patients and existing and prospective APRNs. It defines advanced nursing practice, describes a suggested regulatory approach, and designates advanced-practice titles. Once this is accomplished, nurses and midwives will have official authorization to use the title with definitions and scope of practice [36].

One of the challenges in a poor country is providing good health care. As a result, integrating advanced nurses and midwives into health care setting to improve access and availability of care is appealing and advantageous which will improve health care delivery outcomes. With the addition of this cadre to the system, communication among patients, family members, and health care providers would strengthen. APNs and APMs can also work in Pakistan's remote and hilly areas, where morbidity and mortality rates remain high due to a lack of doctors. In a nutshell, the scope of APNs is expanding, and they will be a significant resource to the current health care delivery system.

They can also serve as mentors for new nurses in managing cases on their own. Recognizing their importance in our context would necessitate significant advocacy and support from political and regulatory bodies.

Conflict of Interest

Nothing to Declare.

Source of Finding:

Not Applicable.

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The Future for International NP Role Development

Madrean Schober

Introduction

International enthusiasm and global emergence of Nurse Practitioners (NPs) has seen trend-setting growth over the past five decades. In turn, the result is increased visibility of the NP. The increased prominence of this nursing role places the evolving concept of the NP at a turning point. A look to the future implies a need to strengthen an understanding of the role and practice level of these nurses. The future looks bright for increased development; however, there is a need to provide clarity and guidance to the public, key stakeholders, healthcare planners, and other healthcare professionals in order to establish sustainable initiatives. Forging the NP role, especially when there are no role models present, offers exciting options for innovative practice in every domain where healthcare services are provided, while also highlighting issues that require debate and discussion. Enthusiasm and motivation for the NP concept, however, are not enough. Key healthcare decision makers will ideally need to develop a strategic approach for optimal inclusion of NPs in order for these nurses to practice to their full potential.

While noting a bright outlook for NPs worldwide, this chapter explores critical challenges to consider for the future. Key issues to identify when coordinating, refining, planning, or launching an NP initiative are proposed. In addition, the chapter emphasizes the need for effective global leadership and ongoing research to continue to support and demonstrate the value of NPs in diverse healthcare settings.

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Foundations for the Future of Nurse Practitioners

Key components of the NP role should be found wherever nursing exists and provide the foundation for clinical practice. The *ICN Guidelines on Advanced Practice Nursing 2020* includes a definition of the NP that is necessarily broad, given the necessity to take into consideration variations in healthcare systems, regulatory mechanisms, and nursing education in individual countries (Refer to Chap. 2 for the ICN NP definition). The following foundational assumptions provide points for discussion in the development of a sustainable future for NPs. All NPs

- Are practitioners of nursing, providing safe and competent patient care
- Have a foundation in generalist nursing education
- Have roles which require formal advanced education beyond the preparation of a generalist nurse
- Have roles with increased levels of competency that are measurable
- Have competencies which address the ethical, legal, caregiving, and professional development of the advanced practice role
- Have competencies and a professional standard which are periodically reviewed for maintaining currency in practice
- Are influenced by the global, social, political, economic, and technological milieu. (Adapted from [1, p. 11])

The ICN official position emphasizes that:

The degree of judgement and accountability increases between the preparation of nurse generalists and that of the APN [which includes the NP]. This added breadth and depth of practice is achieved through additional education and experience in clinical practice; however, the core does not change and it remains the context of nursing. [1, p. 9]

The professional status of nursing and its ability to introduce a new level of practice will influence the launching of a successful NP initiative. The prominence and maturity of nursing can be assessed by the presence of other nursing specialties, levels of nursing education, policies specific to nurses, and the extent of nursing research.

Forging the Nurse Practitioner Concept

Identifying foundational assumptions for the NP, when looking to the future, offers a basis for promoting discussion and debate for ongoing development. The extent of nursing practice and access to a level of nursing education that exists in a country shapes the potential for future development and progression of the NP concept. In addition, the following questions require consideration when refining a view for the future [2, p. 5]:

- What is the nurses' perspective of advancement and NP practice?
- What does advancement or professional progression for nursing mean within the country context?
- Is there a career structure for promotion that would support the integration of NPs?
- Is there an identified position for the NP within the healthcare system with a welldefined job description and scope of practice along with a career pathway commensurate to the NP qualifications and capabilities?
- Are the key components of NP practice acknowledged and addressed?

International organizations such as the World Health Organization (WHO) and the International Council of Nurses (ICN) repeatedly stress that nursing is an essential part of healthcare services worldwide and endorse the benefits of the delivery of healthcare services by NPs and other APNs [3, 4]. This international attention is encouraging, however, it is up to the profession to take up the challenges and develop pathways that are relevant to NP practice and commensurate to countries' healthcare needs.

Critical Challenges

Nurse practitioners are emerging as a valued healthcare professional with immense possibilities for the future. To fulfill this potential, there are critical challenges that require attention. As NPs emerge globally, they often venture into situations that are uncharted and, at times, hostile. In order to fulfill future prospects, it is suggested that the following critical challenges lie ahead: (1) integrating NPs into healthcare workforce planning that includes capacity building; (2) international consensus-building around NP professional identity, and (3) ongoing research.

Integrating NPs into the Healthcare Workforce

As healthcare planners, policymakers, and administrators face the escalating challenges of providing cost-effective, accessible healthcare services, they are pursuing options that are less reliant on the hospital sector, with increased attention to PHC in community settings. If the NP is to be a permanent and sustainable part of the healthcare workforce for the future, it is imperative that human resource development takes account of the place and position of the NP in the healthcare spectrum and skill-mix planning. The critical challenge for NPs is to begin to understand and contribute to frameworks and strategies that take account of the potential services that an NP brings to healthcare.

Activism and advocacy are necessary on the part of the NP to promote the role and create sustained working partnerships with policy and healthcare decision makers for effectively integrating NPs within the healthcare workforce. It seems at times

that there is a desire to move more quickly or to avoid slow and halting progress in advancing the NP concept; however, it is notable that progress depends on the ability of informed individuals and organizations to identify strategic goals. Nurses in advanced levels of practice, such as NPs, are in an ideal position to participate in reshaping healthcare strategies and strategic communication. Theoretical frameworks and toolkits can provide guidance in developing a strategic approach along with increased participation of NP representatives [5–9].

Integral to this challenge is capacity building that emphasizes a continuing process of strengthening NP abilities not only to perform core clinical functions but to solve problems by defining and achieving objectives, while understanding and dealing with developmental needs [10]. It could mean collaboration between countries or organizations within a country to share information and provide an effective lobbying voice based on a deliberate process of building and maintaining momentum in support of an NP presence. It is imperative that NPs, nursing leaders, and key stakeholders pay attention to culture, values, and power relations that influence organizations and individuals to effectively impact the policy and regulatory environment. Eventually, successful engagement in capacity building should increase the range of people, organizations, and groups with knowledge, skill, and confidence to identify issues that are problematic and act on solutions. This challenge asks the nursing profession to be both innovative and practical in engaging in activities that increase the capacities of healthcare systems and the profession to ensure a bright future for NPs [5].

International Consensus-Building Around Professional Identity of the NP: Terminology, Definition, Scope of Practice, Core Competencies, and Education

As a distinctive and new healthcare professional in the healthcare workforce, the NP is increasingly called upon to portray a clear image of this aspect of professional nursing as it is depicted at an advanced level of practice. There is a need to focus on aspects specific to NP practice rather than continually comparing NP practice to medical care. Lack of role clarity or an ambiguous understanding of the role distracts from the significance and value the NP brings to the provision of healthcare services [11, 12]. For the future, NP representatives and leaders will continue to be called upon to provide a clear profile of the NP concept and its significant position in the healthcare workforce. A look to the future implies a need to strengthen the focus on understanding the role or level of practice associated with the NP in order to establish a distinct and understandable professional identity.

Even though discussion and disagreement are necessary in seeking a consensus supportive of the NP concept, ultimately there must be agreement on the key issues of definition, education, scope of practice, and credentialing. These topics are critical to the continued existence and growth of NPs [11]. The core definition of NPs is

a concept that applies to nurses who provide direct clinical care to diverse populations. As a result, the NP role and level of practice require expanded clinical skills and decision-making based on advanced education requiring a different level of regulation and credentialing. Unrealized potential for NPs can be linked to a lack of clarity in role definition [12] and absence of a professional standard with supportive policies. Global leadership needs to act in concert to promote clarity and consistency in a collective approach to meet the complex aspects of this challenge as the international NP trend progresses.

It is not surprising that as the NP concept spreads from countries where the role and level of practice is well established to countries with less experience of the NP, inconsistencies and differences begin to emerge and are noted to be important. These differences require consideration and discussion; however, they are incompatible to systematic and consistent development of the NP internationally. Differences and inconsistencies are handicaps in a world where globalization is taking place within a context of greater mobility of healthcare professionals. The challenge is to identify effective means that promote the continual building and updating of international agreement around core topics central to NP practice. The ability to achieve consensus speaks directly to the aspiration that NPs have a national and global identity that allows consumers and other healthcare professionals to identify who NPs are and for the public to know and trust the services they offer.

Refining Descriptive Terminology

Appropriate use of descriptive terminology is fundamental as NPs strive to accurately portray and refine their professional identity [12, 13]. As this nursing role has developed, literature has repeatedly reported uncertainty, confusion, and ambiguity in describing the NP [12–14]. This vagueness and lack of clarity has led to a level of misunderstanding as to who this nurse is. In addition, terms such as “mini-doc,” “midlevel provider,” “non-physician provider,” and “physician extender,” along with reference to “task shifting” from doctors to nurses do not accurately depict the unique role and scope of practice of an NP. Authors, consultants, and researchers who refer to and use this kind of terminology do a disservice to establishing clarity on behalf of the professional identity of NPs.

In an effort to provide a benchmark for international dialogue and encourage consensus building, ICN offers guidance in *Guidelines on Advanced Practice Nursing 2020* [1, 13]. The concept of consensus building based on accurate and appropriate terminology is essential. It is acknowledged that nursing practice and NP role development is sensitive to country context and even differences in interpretations within a nation or region. The concept of consensus building for NP terminology worldwide may seem difficult, however; the ability to offer effective dialogue and mechanisms that encourage periodic updating in the use of terminology can more accurately depict an international focus associated with the NP role and level of practice. A continued approach to some level of consensus related to NP terminology is imperative for the future.

Research: Defining the Gaps and Finding the Evidence

A key challenge facing the future development and presence of NPs is the need to continue to demonstrate the value of these advanced practice nurses. As a unique and new professional in diverse healthcare settings, the NP is increasingly being called upon to portray a clear image of professional nursing as exhibited in this role and level of practice. Not only is evidence and data beneficial, but there is also a need to focus on aspects of clinical care specific to NP practice instead of continually comparing NP practice to medical care. Clinical outcomes need to be specifically attributed to the NP presence in order to enhance the accuracy of the research that is conducted [15]. All too often the value and impact of NPs is invisible in medically driven healthcare systems that lack NP sensitive indicators [2, 15, 16]. In the future, confirming the value of the NP in distinct healthcare settings will require specific and accurate appraisal of the settings in which they practice. Readily available evidence will continue to be a valuable resource as key stakeholders, healthcare decision makers, managers, administrators, and other healthcare professionals request information clarifying the NP role and associated clinical outcomes.

In addition, NPs need to increasingly participate in the research processes [15–17]. They will also be called upon to assess the quality of evidence demonstrated in research studies and translate findings into practice. If NPs of the future are required to include research as a role component in practice, they will be expected to understand and implement the evidence. Healthcare systems and employers need to acknowledge the legitimacy of this aspect of the NP role and take into consideration planning for suitable resources, time to participate in research processes and establish recognition that research is a valued component of the NP role.

Even though international literature substantiates data supportive of the NP concept, evidence continues to mainly originate from developed countries and nations that have a longer history of success with NP roles. Future research describing the growing presence of new NP initiatives will not only document clinical outcomes but has the potential for comparing differences and similarities in development and implementation as countries increasingly seek to identify strategies for integrating NPs into the healthcare workforce.

Refer to chapters “The NP as a Contributor to Research” and “NP Outcomes Evaluation” for further discussion of the NP as a participant in research processes.

Conclusion

Contemporary geopolitical circumstances and societal needs, together with comorbidities of illness and aging populations, can seem daunting when seeking to achieve solutions to enhance healthcare services worldwide. The World Health Organization, in its 2030 Agenda for Sustainable Development Goals, seeks an era of universal healthcare where we take a long-term, patient-centered view. This perspective promotes a view of illness prevention and health promotion as well as cure that necessitates consideration of new delivery models for healthcare services. Realigning the

perspective of provision of healthcare services requires a shift away from traditional positions and responsibilities of healthcare professionals to focus on innovative and transformational models of care. A component of this viewpoint requires more responsive prototypes of care that includes strengthening the nursing profession.

Nurse practitioners are seen as one option that can add value and strengthen healthcare systems. However, global leaders and the nursing professional must recognize critical challenges in order to pursue and develop strategies for action. This chapter portrays a view of the future for NPs and identifies challenges that will continue to need attention as these nurses carve a fundamental position as vital healthcare professionals in diverse settings. The future ahead rests on meeting a complex set of needs and environmental factors. The more urgent the demand for access to healthcare services, the more likely NPs will be considered as a solution to enhancing health care. Barriers such as lack of role clarity, lack of leadership and regulatory restrictions contribute to a more slowly evolving process of acceptance.

The point of origin for the spark that starts the cascade of change may differ. It may be the inspired individual nurse with a vision of how nurse-managed services can improve care; or a physician administrator who understands that collaborative models of care may make better use of different healthcare professionals. An organization or healthcare facility looking to enhance the quality of health care can initiate changes to introduce a skill mix of professionals that include NPs. A consumer with experience of care by NPs in another facility or country can stimulate discussion on the possibility of a similar service in their community. Nurses searching for career pathways that enable them to expand their professional and clinical skills and be recognized for this can be the catalyst for conversation that leads to recognition and implementation of NPs.

Country narratives in Chap. 2 and additional chapters in this book provide examples of numerous international and intercountry collaborative efforts that have shaped the present-day landscape for NPs. A view of prospects for the future of NPs suggests that sharing of clinical experiences, regulatory proficiency, and research will strengthen the ongoing interest in the NP concept.

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Part III

The Role of the Nurse Anesthetist



Challenges to Global Access to Anesthesia and Surgical Care

Richard Henker and Mai Taki

Abbreviation

CN	Certified Nurse
CNS	Clinical Nurse Specialist
COVID-19	Coronavirus Disease of 2019
CT Scan	Computerized Tomography scan
DALY	Disability Adjusted Life Year
G4	Global Alliance for Surgical, Obstetric, Trauma and Anaesthesia Care
ICN	International Council of Nurses
IFNA	International Federation of Nurse Anesthetists
IOM	Institute of Medicine
LMIC	Low- and Middle-Income Countries
MOH	Ministry of Health
NSOANP	National Surgery Obstetric Anesthesia and Nursing Plan
NSOAPs	National Surgery Obstetric and Anesthesia Plan
SAO	Surgeon, Obstetrician and Anesthesiologist
SDG	United Nations Sustainable Development Goals 2030
SOTA	Surgical, Obstetric, Trauma and Anesthesia Care
TNSMI	Training system for Nurses to perform Specific Medical Interventions
UHC	Universal Health Coverage

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UN	United Nations
UNITAR	United Nations Institute for Training and Research
WFSA	World Federation of Societies of Anesthesiologists
WHA	World Health Assembly
WHO	World Health Organization
WPRO	Western Pacific Office of the World Health Organization

Overview of Access to Anesthesia and Surgical Care

Access to anesthesia and surgical care is often overlooked as a component of global health. It is estimated that 5.3 billion people do not have access to safe, affordable surgical and anesthesia care [1]. Farmer and Kim [2] described surgery as the “neglected stepchild of global health.” Craig McClain described global anesthesia as the “invisible friend” of the neglected stepchild of global health [3]. Common conditions such as hernias, fractures, obstructed labor, appendicitis require treatment with surgical and anesthesia care. It was estimated that 16.9 million or 32.9% of all deaths are due to lack of anesthesia and surgical care [4]. Access to surgical and anesthesia care has lagged compared to other areas of global health [5]. In 2019, Dr. Tedros Director-General of the World Health Organization stated, “*No country can achieve Universal Health Coverage unless its people have access to safe, timely, and affordable surgical services...It’s therefore vital that countries invest in surgery.*” In a publication from the WHO in 2017 [6], it was estimated that one third of the global burden of disease requires surgical, obstetric, or anesthesia care. Of the 313 million surgical cases performed each year, only 6.5% of surgical cases are performed in low- and middle-income countries (LMICs) [7]. If patients can access surgical care a quarter of them and their families will incur financial catastrophe [5]. The World Bank has estimated that 77.2 million disability-adjusted-life-years (DALY) could be prevented with surgical care [8]. The Lancet Commission on Global Surgery has proposed a goal that 80% of the world population have access to surgical care by 2030 [5].

Access to surgical care requires not only additional surgeons, nurses, technicians, and other support staff but anesthesia providers, including nurse anesthetists that can increase access to anesthesia services and surgical care. Nurse anesthetists and other non-anesthesiologist healthcare providers are the most predominant anesthesia providers in countries with the lowest anesthesia provider density [9]. Countries in Africa and Southeast Asia are most likely to have less than five anesthesia providers per 100,000 of the population [9]. Nurse anesthetists are often cited as the answer to the lack of access to surgical care [10–13].

How is Access to Surgical and Anesthesia Care Defined?

Access to surgical care has been defined by Alkire et al [1] as timeliness, surgical capacity, safety, and affordability.

Timeliness is defined by Meara et al. [5] as the ability to reach a facility in two hours to provide access to surgical care. Bellwether procedures that require urgent attention within two hours include caesarean delivery, laparotomy, and treatment of open fractures. The Western Pacific Region Office of WHO reported that in most countries in the WPRO region, less than 80% of the population has timely access to surgical care [14].

Surgical volume is defined as the number of procedures conducted by a country [5]. In the Western Pacific Region, there is considerable disparity between the high-income countries and LMICs. The number of surgeries performed in Australia in 2016 was reported to be 10,156 per 100,000 of the population. In the Solomon Islands, the number of surgeries performed in 2016 was 868 per 100,000. Watters et al. [15] state that a smaller number of procedures is related to greater complication rate in LMICs due to limitations in equipment, supplies, and personnel. The Lancet Commission on Global Surgery recommends a minimum of 5000 cases per 100,000 of the population to improve life expectancy and maternal mortality [5].

Safety in anesthesia and surgical care has improved considerably in high income countries, but still lags in LMICs. In a study done by the Global Surgery Collaborative [16], the mortality rate for ASA 3 (an anesthesia risk factor classification) patients requiring emergency abdominal surgery was 7.2% for high income countries, 17.7% for middle income countries, and 19.1% for low-income countries. Mortality rate was reported as 3.1% in a study of non-cardiac surgery patients in Southern Africa [17]. In a meta-analysis [18] of surgical mortality in LMICs, the mortality rate ranged from 0.1% for appendectomies, cholecystectomies, and caesarean sections to 20%–27% for head injury-related surgeries and typhoid intestinal perforation. Interventions used to improve safety and perioperative outcomes have included the development and implementation of guidelines such as the International Council of Nurses Guidelines on Advanced Practice Nursing: Nurse Anesthetists [19], the WHO World Federation of Societies of Anesthesiology (WFSA) International Standards for a Safe Practice of Anesthesia [20], and the WHO Safe Surgery Checklist [21].

Financial catastrophe It has been estimated that 33 million people will have financial catastrophe from out-of-pocket expenses due to disease process that requires surgical care [22]. Hamid et al. [23] projected that 3.4% of households were moved into poverty due to healthcare expenditures. Disease processes that were most likely to cause catastrophic healthcare expenditures included cholecystectomy, mental health disorders, kidney disease, cancer, and appendectomy. In a study done by Ferraras et al. [24], not only was the impact of the direct costs of neurosurgical procedures reported but the authors also discussed the costs incurred with transportation, care giver expenses, and lost income due to unemployment of patients and care givers. Out-of-pocket costs for surgical procedures require an immediate outlay to cover expenses that leads to higher burdens on impoverished patients and families. Recommendations from authors based on these findings included increased awareness for policymakers of the out-of-pocket expenses not only for direct costs of surgical care but indirect costs.

Policy Initiatives to Promote Access to Anesthesia and Surgical Care

WHO, United Nations, International Council of Nursing, International Federation of Nurse Anesthetists, G4 Alliance, and other groups have been involved in policy initiatives that focus on improving access to anesthesia and surgical care.

WHO Global Initiative for Emergency and Essential Surgical Care (GIEESC)

In 2005, the WHO established the GIEESC. The focus of GIEESC was to “...*share knowledge, advise policy formation and develop educational resources to reduce the burden of death and disability from conditions that could be treated through surgery*” [25]. The first meeting of the GIEESC was held in Switzerland in 2006 and the most recent meeting of the group was held in Bangkok in 2020. Objectives of the meeting in Bangkok included follow-up on the progress of implementation of WHA resolution 68.15 in the Southeast Asian and Western Pacific regions, and discussion of the development of NSOAPs in LMICs.

WHO: Safe Surgery Saves Lives

In 2007, WHO initiated a 19-item safe surgery checklist program to decrease the number of surgical deaths around the world. It was estimated that 39% of adverse events took place in the operating theatre and many could be averted [26]. The initiation of the checklist was reported to reduce the number of complications per 100 patients from 27.3 to 16.7 and hospital mortality from 1.5% to 0.8% [27]. Although surgeons and staff often dislike the delay in using the checklist [20], the implementation of “time outs” has decreased perioperative morbidity and mortality worldwide.

Institute of Medicine: The Future of Nursing Leading Change, Advancing Health

In 2010, the Institute of Medicine (IOM) published *The Future of Nursing Leading Change, Advancing Health* [28]. The Robert Wood Johnson Foundation and the IOM, under the guidance of Donna Shalala, developed a landmark initiative that was designed to position the nursing profession into a leadership role in a rapidly changing healthcare environment. The recommendations from the IOM [28] were:

1. *Nurses should practice to the full extent of their education, and training.*
2. *Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression.*

3. *Nurses should be full partners, with physicians and other health professional, in redesigning health care in the United States.*
4. *Effective workforce planning and policy making requires better data collection and an improved information infrastructure [28].*

Although this report was intended for nurses in the USA, this initiative has been cited by many leaders around the world to expand scope of practice for nurses and improve access to health care, including anesthesia care.

Sustainable Development Goals (SDGs)

The sustainable development goals were introduced in 2015 and adopted by the United Nations member states. The 17 SDGs focus on ending poverty and other deprivations. Meeting the SDGs is expected to improve health, education, equality and promote economic growth [29]. Recent challenges to meeting the SDGs include the COVID-19 pandemic and climate change. These challenges have affected availability of food, health, education, environment, peace, and security.

World Health Assembly Resolution 68.15 Strengthening Emergency and Essential Surgical Care and Anaesthesia as a Component of Universal Health Coverage

In 2015, the World Health Assembly approved resolution WHA 68.15, a policy initiative to advance global surgical care. The resolution provided recommendations on providing an increase in the most cost-effective surgical procedures, increasing surgical capacity, and creation of National Surgical, Obstetric, and Anesthesia Plans (NSOAP). Since the passage of the resolution of the WHA 68.15 in 2015, NSOAPs have been initiated in Zambia, Ethiopia, Tanzania, Nepal, and Pakistan [25]. In Nigeria, nursing was added to their NSOAP, therefore the plan for strengthening surgical care is the national surgery, obstetric, anesthesia and nursing plan (NSOANP). Seyi-Olajide et al. [30], state that “...*quality nursing care is required for safe surgery and that improvements in surgical outcomes are difficult to achieve without strengthening nursing care.*” Components of the NSOAP strategy as provided in the UNITAR NSOAP Manual 2020 [21] include:

- Service delivery
- Infrastructure, products, and technology
- Workforce
- Information management
- Financing
- Governance

United Nations Resolution Adopted by the General Assembly 2019, Universal Health Coverage: Moving Together to Build a Healthier World

In 2019, United Nations passed an updated version of the Universal Health Care resolution that, for the first time, included surgical care. In section 35 on page 6 of the resolution, it states:

Scale up effort to address the growing burden of injuries and deaths, including those related to road traffic accidents and drowning, through preventive measures as well as strengthening trauma and emergency care systems, including essential surgery capacities, as an essential part of integrated health-care delivery.

Another document published by the United Nations Institute for Training and Research (UNITAR) is the National Surgical Obstetric and Anaesthesia Planning Manual 2020 [22]. This document provides a blueprint for countries to develop and implement NSOAPs. Sections of the manual include: “Developing a case for Prioritizing and Planning SOA Care” and “The SOA Planning Process” [22]. The NSOAP manual was developed with the Global Surgery Foundation and the Harvard Medical School Program in Global Surgery and Social Change [22].

Action Framework for Safe and Affordable Surgery in the Western Pacific Region (2021–2030)

The Western Pacific Region Office (WPRO) of the WHO published the Action Framework for Safe and Affordable Surgery in the Western Pacific Region (2021–2030) [14]. Rationale provided for the safe surgery initiative was lack of access to surgical care within two hours for Bellwether procedures such as caesarean section, laparotomy, and treatment of open fractures. Mortality after surgery was cited as 1 in 100 [14]. Suggestions to improve access to surgical care included areas such as expanding the workforce, medications, equipment, infrastructure, and data management [14]. Of note, nurses are often referred to as non-physician health care workers. In Section 2.3 of the report, Skilled Workforce, there is little discussion about the importance of “non-physician” providers in the plan even though nurse anesthetists have been providing many of the anesthetics in the WPRO region. A goal of 20/100,000 surgeons, anesthesiologists and obstetricians has been set, but there was no goal for the number of nurses, nurse anesthetists, midwives, or nurse practitioners indicated in the document [14].

Scope of Practice

Developing and implementing standards of care for anesthesia providers has been suggested as a strategy to provide the highest level of anesthesia care [19]. The International Council of Nursing, in conjunction with the International Federation

of Nurse Anesthetists (IFNA), published guidelines to “...support stakeholders to develop policies, frameworks and strategies support of Nurse Anesthetists.” (page8) [30]. The guidelines are used to contribute to education, regulations, and scope of practice for nurse anesthetists around the world. IFNA standards are to be used to confirm scope of practice in countries that are developing their own scope of practice [31]. The ICN Guidelines include content to support implementation or growth of nurse anesthetist practice:

- Introduction
 - Background of the Nurse Anesthetist
 - History of Nurse Anesthesia
 - Practice Settings
 - Need for Nurse Anesthetists
- Description of Nurse Anesthetists
- Nurse Anesthetist’s Scope of Practice
- Education for the Nurse Anesthetist
 - Prerequisites for entry into a Nurse Anesthetist education program
 - Post-graduate education requirements for the Nurse Anesthetist
 - Program length
 - Accreditation or recognition of Nurse Anesthetist educational programs
- Establishing a Professional Standard for the Nurse Anesthetist
 - Certification, credentialing, and regulation of the Nurse Anesthetist
 - Title protection for the Nurse Anesthetist
 - Experience, Lifelong Learning/Continuous Professional Development
 - Increase awareness and clarification of the role of Nurse Anesthetist
- Nurse Anesthetists’ contributions to healthcare services
- Safe Practice of Anesthesia
 - Systematic reviews
 - Research evidence
 - Summary of findings on safe nurse anesthetist practice

The World Federation of Societies of Anesthesiology and WHO published updated International Standards Safe Practice of Anesthesia in 2018 [19]. The components of the standards include (1) professional aspects; (2) facilities and equipment; (3) medications and intravenous fluids; (4) monitoring; and (5) the conduct of anesthesia. Although standards were categorized as highly recommended, recommended, and suggested, there was no grading of evidence to support the standards. The Lancet Commission on Global Surgery recommendation of 20 surgeons, anesthesiologists, and obstetricians per 100,000 of the population was highly recommended in the standards document [19]. The number of nurse anesthetists was not included in the standards although it was highly recommended that anesthesiologists provide all anesthesia care and supervise other anesthesia providers [19]. Given the workforce shortage in many LMICs, nurse anesthetists have been cited as the solution to increasing access to anesthesia and surgical care [10–13].

Factors Delaying Access to Anesthesia and Surgical Care

Delays in access to anesthesia care and surgical care include not only infrastructure, service delivery, workforce, equipment, supplies, financing, information systems but challenges with travel, cultural beliefs, poor education, and low awareness of services available [5]. The Lancet Commission on Global Surgery categorizes delays in receiving care using the 3-delay framework. The first delay is due to education, cultural beliefs, or lack of awareness of availability of care by patients and families. The second delay is due to lack of hospitals in the area. Delayed access to hospitals can include few travel options for patients, or travel cost may exceed resources of patients and families. The third delay occurs when the patient can travel to a hospital that may lack comprehensive surgical or anesthesia care. Contributing barriers for families include limited access to the Internet and literacy. Literacy rates in LMICs are less than high income countries and access to the Internet is often limited, contributing to lack of awareness of where to access to health care. In Laos, a low-middle-income country, word of mouth is often used between families to gain knowledge regarding access to care.

Infrastructure for Hospitals in LMICs

In high-income countries, infrastructure is often assumed to be available to support hospitals, but in LMICs, basic resources such as electricity and water are not always accessible. In a study reported by Kushner et al. [32], from 132 facilities in eight LMICs in 2010, water was not available in 23% of facilities. Electricity was not available in 11% of facilities, and sometimes available in 53% of facilities. Oxygen was never available in 46% of facilities, sometimes available in 33% of facilities, and always available in 21% of facilities. Anesthesia machines were never available in 45% of facilities, sometimes available in 23% of facilities, and always available in 32%. Although this study was published in 2010, assumptions regarding basic resources such as water and electricity need to be considered when developing systems for anesthesia and surgical care.

An area that is always overlooked for support of the sophisticated equipment for providing surgical care is the biomedical technician support. Many organizations have donated the highest level of equipment to locations in LMICs only to have the equipment relegated to the “medical device graveyard” due to lack of a skilled technician to keep the machine running. There are biomedical device companies that take into consideration the lack of infrastructure to provide surgical care. Gas machines by these companies do not require oxygen or electricity and little maintenance that can provide general anesthesia in austere environments [33].

Financing to Improve Access to Anesthesia and Surgical Care

Financing to provide adequate access to anesthesia and surgical care in LMICs by 2030 was reported to be \$300 to \$420 billion [34]. Current funding for surgical care in LMICs is typically a low priority [34]. Potential funding sources for surgical care include governments, philanthropic bodies, non-governmental organizations, and the private sector. Other options are insurance and out of pocket funds. Budgets for governments in LMICs are often tight, and increasing funding for surgical and anesthesia care is a challenge. Sonderman et al. [35] suggest that an increase in funding efforts should use a corporate social responsibility approach. This approach would show a company's social concerns and benefit to society [35]. Innovative strategies to fund access to surgery and anesthesia care are required to meet the goal of 80% of the world population to have access to surgical care by 2030.

Blood Supply for Surgery

Blood transfusion services are a critical part of surgical and anesthesia care. Groups most affected by a limited blood supply in LMICs are children under 5 years age with anemia, and women during pregnancy and delivery [35]. Barnes et al. [36] found that 50 of 71 hospitals in LMICs that responded to a survey had hospital blood transfusion services. Of those that had blood transfusion services, 77% collected blood for transfusion. Only 23% of transfusion services in LMICs were dependent upon a centralized blood supply similar to blood transfusion services in high income countries. Barriers for blood transfusion services in LMICs include lack of infrastructure, low public participation, shortage of a skilled workforce, lack of access to educational programs, and a dearth of sustainable financial models [37].

Imaging Services to Improve Surgical Care

Imaging services, including ultrasound, X-rays, and computerized tomography scans, are needed to diagnose, monitor, or treat disease processes [37]. Imaging is particularly important for care of the patients with cancer. Surgery has been reported to be responsible for 60% of cancer cures or control of cancer [5]. The number of radiologists has been reported to be on average 1.9/million in low-income countries, 22.3/million in low-middle-income countries, and 97.9/million in high income countries [36]. The number of CT scanners in LMICs has been reported to be 1 for every million of the population compared to 40 for every million of the population in high income countries [38]. Imaging services are an essential component of surgical care.

Travel as a Barrier to Surgical Care

Access to surgical care is also related to travel availability to hospitals by patients and families. Meara and colleagues [5] reported that the median distance traveled for surgical care was greater than 25 km in LMICs and less than 10 km for high income countries [5]. Many patients and families in rural LMICs do not have a vehicle and need to pay for transportation to a hospital. It should be noted that road conditions affect patients and families' abilities to travel. Weather conditions such as monsoons and treacherous roads extend travel time. Direct costs for the surgery and hospital stay are often reported, but financial hardship for transportation is often not conveyed.

Culture as a Barrier to Surgical Care

Understanding of culture is vital to improving health care in LMICs. Ideally, traditional medicine is incorporated into the care provided by nurses and physicians in the hospital setting, but traditional medicine sometimes delays access to surgical care. In Lao Peoples Democratic Republic (PDR), Hmong families that reside in mountainous rural areas will first see a Shaman to protect the sick from spirits often by sacrificing animals. Due to the use of traditional care and challenges with travel, few Hmong patients from rural areas are seen within the 2-hour limit for Bellwether procedures. Once in the hospital, ethnic groups such as the Hmong, may be apprehensive of the care provided by clinicians of other ethnic groups. Hmong believe that the spirit leaves a patient during anesthesia and families will ask to help regain the spirit at the entrance to the operating theatre. The best method to work with Hmong families is a nurse anesthetist that is Hmong and understands the culture and can speak the language with patients and families.

Anesthesia Workforce

Workforce for surgery and anesthesia care includes surgeons, anesthesiologists, nurse anesthetists, obstetricians, nurses, pathologists, radiologists, laboratory technicians, rehabilitation specialists, biomedical technicians, and engineers [5]. A threshold for specialist surgical workforce of 20/100,000 population or more has been suggested by the Lancet Commission on Global Surgery to improve outcomes [5]. The specialist surgical workforce includes surgeons, obstetricians, and anesthesiologists, often referred to as SAO density. The WFSA has recommended 5 anesthesia providers/100,000 of the population to improve access to anesthesia care and patient outcomes [9]. In addition to surgeons and anesthetists, the Lancet Commission on Global Surgery highlighted the importance of healthcare providers at health centers and first level hospitals to refer patients to a hospital that can provide Bellwether procedures [5].

Comparison of Anesthesia Workforce in High-Income and LMICs

The anesthesia workforce consists of nurses, physicians, medical assistants, and others that provide anesthetics in LMICs. The World Federation of Societies of Anesthesiology and the International Federation of Nurse Anesthetists continue to assess the anesthesia workforce in countries around the world. In a study conducted by the WFSA and reported by Kempthorne et al. [9], 153 of 197 countries responded to a survey of the anesthesia provider workforce. Of those countries, 70 had less than five anesthesia providers per 100,000 of the population. This included nurse anesthetists, anesthesiologists, and other healthcare workers providing anesthesia. The areas of the world that were more likely to have low numbers of anesthesia providers was Africa and Southeast Asia [9]. See Table 1 from Kempthorne to compare the number of physician anesthesia providers by World Bank Country Category.

The nurse anesthetist workforce is often included in the group labeled as non-physician anesthesia providers in reports from WFSA. The number of non-physician anesthesia providers overall in countries in Africa is 10,706 and the number of anesthesiologists is 3713 for 910,172,000 of the population in Africa. The ratio of anesthesia providers to population in Africa is 1.58/100,000. In the Western Pacific Region, the number of physician anesthesia providers is 5935 and non-physician anesthesia providers is 209 for a regional population of 249,959,773. The ratio of anesthesia providers to population is 2.46/100,000 in the Western Pacific Region. This compares with high income countries such as Japan with 12,208 physicians providing anesthesia and an unknown number of nurse anesthetists for a ratio of 9.64 anesthesia providers per 100,000 of the population. The number of anesthesia providers in the United States is 67,000 physicians and over 57,000 nurse anesthetists. The anesthesia provider ratio is 20.82/100,000 of the population. The number of nurse anesthetists in some of the WFSA reports were underrepresented, but the IFNA is collaborating with WFSA in assessing the workforce to provide a more accurate indication of anesthesia providers.

Table 1 Kempthorne et al. (September 2017)

World Bank country category	Number of countries	Population	Total physician anesthesia providers	Physician anesthesia providers per 100,000 of the population
High Income	45	1,162,625,644	208,813	17.96
Upper-Middle Income	40	2,550,539,869	175,739	6.89
Lower-Middle Income	42	2,860,308,239	50,942	1.78
Low Income	26	594,671,000	1102	0.19

The WFSA Global Anesthesia Workforce Survey, *Anesthesia & Analgesia*, Volume 125, Number 3, 981–90. Reprinted with permission

Nurse Anesthetists in Rural Areas in LMICs

The number of anesthesia providers is known to be low in LMICs, but the number of anesthesia providers in rural areas of LMICS is even less [10]. There is wide support for the development of nurse anesthesia programs to increase anesthesia care and access to surgery in these rural areas [11, 12]. In Kenya, the number of anesthesiologists is 0.44/100,000 and only 20% of the surgical need is met in eastern sub-Saharan Africa. Umutesi et al. [10] evaluated the impact of Kenyan registered nurse anesthetists on access to surgical care in nine hospitals. Kenyan nurse anesthetists were used to increase the anesthesia provider density by 43% in three of the nine hospitals. The increased access to anesthesia care almost doubled the number of surgical cases performed in the hospitals where nurse anesthetists were utilized [10]. To meet the WFSA goal of 5 anesthesia providers per 100,000 of the population in LMICs, education of more nurse anesthetists around the world is needed [10–13].

Recommendations to Increase the Anesthesia Work Force in LMICs

In response to the low number of anesthesia providers in LMICs, recommendations have been provided to reach the 5 anesthesia providers per 100,000 of the population [11]. Federspiel et al. [39] suggested task shifting as strategy to meet goals for surgical and anesthesia care. Task shifting is defined by WHO as “...*the name now given to a process whereby specific tasks are moved, where appropriate, to health workers with shorter training and fewer qualifications.*” [39]. In the review by Federspiel et al. [39], nurse anesthetists were practicing in 111 countries. Expanding nurse anesthetist practice was suggested to increase access to anesthesia care. The WFSA suggested a Global Anesthesia Training Framework for physician and non-physician anesthesia providers to increase the number of anesthesia providers [11]. Other recommendations from WFSA included improving the quality and safety of care. Recommendations from the Lancet Commission on Global Surgery also suggested increasing the number of non-physician anesthesia providers [5]. In addition, Meara et al. [5] suggested that non-government organizations that engage in medical missions coordinate activities with the ministry of health and include an education component for local surgical teams [5]. The ICN guidelines for nurse anesthetist practice recommend expanding education of nurse anesthetists to increase access to anesthesia and surgical care to prevent disability and save lives [31].

Access to Surgery and Anesthesia Care in a High-Income Country: Japan

In Japan, a shortage of surgeons and anesthesiologists was identified as a problem in 2004 due to the uneven distribution of physicians by region. In response, an advisory body to the Minister of Health, Labor and Welfare discussed the development of the role of “anesthesiology nurses” like those in other countries [40]. Since this advisory report was provided to the Ministry of Health, Labor and Welfare, the development of anesthesiology nurses and other highly specialized nurses has accelerated.

Barriers to access surgical care were reported in a survey conducted by the Japan Surgical Society in 2016. Factors that decreased access to surgical care included: (1) outsourcing of anesthesia services due to difficulties in hiring anesthesiologists at their facilities; (2) rising compensation for outsourced anesthesiologists; (3) inability to handle emergency surgeries; and (4) an increase in patient waiting time for surgery due to lack of anesthesia care [40]. In response, the importance of multidisciplinary collaboration, including advanced practice nurses, has been cited.

The annual number of anesthesia cases and surgeries in Japan in FY2020 exceeded 17.38 million [41]. The number of surgeons in FY 2020 was 13,211 and anesthesiologists 10,277 [40]. If the number of surgeries is simply converted to the number of physicians, one surgeon is responsible for five surgeries per day, and one anesthesiologist is responsible for eight anesthesia cases per day. Assuming it takes more than one hour from the time a patient enters the operating room to the time he or she leaves, it is calculated that a surgeon must perform more than five surgeries per day and an anesthesiologist must perform more than eight surgeries per day. Note that although the Japanese Society of Anesthesiologists has adopted the principle of “one anesthesiologist per surgery” in which all anesthesia is performed by an anesthesiologist, in practice, anesthesia is often provided by a member of the surgical team.

In Japan, in 1995, graduate education for Certified Nurse Specialists (CNS) was started. In 2010, Certified Nurse (CN) training of Peri-Anesthesia Nurses began and, in 2015, the Training System for Nurses to perform Specific Medical Interventions (TNSMI) was launched. In 2019, training in intraoperative anesthesia management began, and highly specialized nurses called “Japanese APNs” were able to manage anesthesia under the direction of doctors [42]. In 2022, the total number of nurses in Japan was 1.29 million, with 2733 CNSs, 21,847 CNs, and 2887 TNSMI graduates. In addition, the number of nurses who have completed educational courses in intraoperative anesthesia management has increased to 554, indicating that the Japanese nursing system is moving toward greater access to anesthesia care due to the implementation of these nursing specialty programs.

Table 2 The Global Alliance for Surgery, Obstetric, Trauma and Anesthesia Care (The G4 Alliance) provided the following indicators for evaluation of SOTA care [44]

Domain	Clinical area	Indicator
Access	Surgical system	Access to timely essential surgery
	Trauma care	Estimated proportion of seriously injured patients transported by ambulance
	Trauma and obstetrics	National whole blood donation rate
	Obstetrics	C-section rate
	Anesthesia	Proportion of operating theatres with pulse oximetry Ratio of anesthetists to surgeons
Quality	Surgical system	Surgical volume
	Trauma care	Inpatient mortality rate
	Obstetrics	Maternal mortality ratio Neonatal mortality
	Anesthesia	Postoperative mortality rate on operative day
Financial	Surgical System	Protection against impoverishing expenditure Protection against catastrophic expenditure

Indicators of Access to Surgery and Anesthesia Care in LMICs

Progress for access to anesthesia and surgical care can only be determined if there are indicators measured to evaluate the effectiveness of implementation of policies related to NSOAPs and expansion of the anesthesia workforce. Indicators of access to surgery that have been provided by the Lancet Commission on Global Surgery include (Table 2):

- Geographical access to a hospital providing Bellwether procedures within two hours
- Surgical, anaesthetic, and obstetric provider density
- Total operative volume
- In-hospital postoperative mortality
- Impoverishing cost burden
- Catastrophic cost burden

For a recent example of the use of these indicators in Colombia, please see the publication by Hanna et al. [43].

Next Steps to Improve Access to Anesthesia and Surgical Care

Improving access to anesthesia and surgical care will require implementation of policy initiatives (e.g., NSOAPs), building the workforce, financial support for infrastructure, equipment, and supplies. Implementation of indicators to measure progress is essential to determine actions that are successful in improving access to anesthesia and surgical care. The Lancet Commission on Global Surgery suggested

action in the following areas to meet the goal of 80% of the world population having access to anesthesia and surgical care by 2030 [5].

- Infrastructure
- Workforce
- Service delivery
- Financing
- Information management

See the Lancet Commission on Global Surgery for a more detailed description of actions needed to meet the goal for access to surgical care in 2030.

The role for nurse anesthetists as we work on meeting this goal is to advocate for policies to improve access to anesthesia care. We need to promote financing of global anesthesia by governments, corporations, and individual donations. As a profession, we need to contribute to the development of the nurse anesthetist workforce in LMICs. There are excellent models from programs developed in Kenya and other countries around world. Expanding the global nurse anesthetist workforce is one of the answers to increasing access to surgical care to decrease disability and save lives.

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The International Federation of Nurse Anesthetists: Past, Present, and Future

Pascal Rod

► Abbreviated Key Terms

AANA	American Association of Nurse Anesthetists
ANP	Advanced Nursing Practice
APAP	Approval Process for Anesthesia Programs
APN	Advanced Practice Nurse
CQAIE	Center for Quality Assurance in International Education
EBA	European Board of Anaesthesia
EFN	European Federation of Nurses
ESAIC	European Societies of Anaesthesia and Intensive care
ESNO	European Specialists Nurses Organization
EU	European Union
G4 Alliance	Global Alliance for Surgical, Obstetric, Trauma and Anesthesia care
GIEESC	Global Initiative for Emergency and Essential Surgical Care
ICN	International Council of Nurses
IFNA	International Federation of Nurse Anesthetists
IHF	International Hospital Federation
LIC	Low Income Country (World Bank Classification)
MIC	Middle Income Country (World Bank Classification)

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NSOAP	National Surgery, Obstetric and Anesthesia care
SOTA	Surgical, Obstetric, Trauma and Anesthesia care
WCNA	World Congress for Nurse Anesthetists
WFSA	World Federation of Societies of Anesthesiologists
WHA	World Health Assembly
WHO	World Health Organization

Genesis

When, in 1978, Mr. Hermi Löhnert, a nurse anesthetist from Switzerland, heard through his surgeon that there were also nurse anesthetists in the USA, he was surprised that Switzerland was not the only country in the world with nurse anesthetists [1]. He had just been elected as the first president of the recently founded association of Nurse Anesthetists in the German-speaking part of Switzerland. In his quest for further information, he found an issue of the American Association of Nurse Anesthetists (AANA) magazine in a library, where he read more about their practice. He decided to participate to their continuing education annual meeting in Detroit, Michigan and was financially supported by his surgeons to attend. There, Mr. Löhnert met another foreign nurse anesthetist from Denmark, and enjoyed the very well-organized professional American organization with more than 22,000 members and a strong Continuing Education system. After interesting discussions with the Executive Director, Mr. John Garde, and the President, Mr. Ron Caulk, it was decided to establish a close relationship. Mr. Löhnert attended more meetings after this one and, several years later, he proposed to the AANA organization of a first International Symposium for nurse anesthetists. This project became a reality in 1985 in Lucerne, Switzerland where 250 participants attended from 13 countries. The Nurse Anesthesia specialty was definitely not as secluded and unique as some thought. This first international event was the starting point of an international cooperation. A second global meeting was in 1988 in Amsterdam, The Netherlands, organized by the Dutch association of nurse anesthetists. At the second symposium, a meeting was held with representatives of different countries to work on the establishment of an international Organization for nurse anesthetists. After a few additional meetings, in June 1989, representatives from 11 countries met in Teufen, Switzerland to sign the charter and launch the International Federation of Nurse Anesthetists (IFNA).

Foundation Steps

During preliminary discussions, many topics were discussed and each country was promoting its own model of education, practice, and regulation. There was no harmonization. and differences were based on historical developments in each country. Since the very beginning, anesthesia was controlled by surgeons and early providers were nuns, nurses, or students long before physicians became involved. There is no

medical anesthesia specialty before the late 1950s, especially in Europe, were the Poliomyelitis pandemic has been one of the reasons for having more non-surgeon physicians involved in needs for intensive care and ventilatory care. The medical specialty in anesthesia-intensive care is still combined in most of the countries in the world. At the same time, nurses remained the natural anesthesia providers for surgery procedures, receiving an adequate additional training and/or education. It was certainly one of the first special training in nursing beyond the general care, even if it took time for recognizing it. Based on this, charter association members of the IFNA went on discussions with their own historical background and educational evolution. In many countries, the anesthesia medical specialty was more and more developed and an increasing number of physicians influenced the reorganization of anesthesia services, with nurses slowly losing some of their autonomy. In 1989, at the time of foundation of the IFNA, many associations were referring to political fights for maintaining their specialty in front of medical influence for limiting more and more their competencies. Many were also referring to the duality in their roles as both Nurse and Anesthetist with the quest for existing between nursing bodies looking at them as technicians and medical bodies trying to limit them to executive tasks. Each national experience for maintaining their existence has influenced many of the discussions. Rapidly, nevertheless, common objectives could be defined. The wording Nurse Anesthetist was chosen as generic title for defining the role of nurses involved in anesthesia care whatever their official recognition could be. The official title was varying in different countries, but on working site, it was the most commonly used denomination. The draft bylaws were very inspired by the ICN ones, as it was the only recognized International Organization for nurses in existence. Because most differences in status, recognition, education, and practice were more dependent on each country's regulations, it was decided to have national association membership, one per country, instead of individual ones. The choice for being a federation was then the most rational. Each country's association, whatever their number of active members, has the same voice, considering that the model of education and practice is more important than the number of practitioners for international purposes. The association member has to be the most representative of the nurse anesthetists in the country, and it can be an independent body, or a branch of a larger group or organization. The most important is to be autonomous in one's decisions and not dependant on a board that won't have any nurse anesthetist. In 1989, there were very few countries recognizing nursing practice beyond the general care, and advanced practice concept was not widespread, especially in Europe. In some countries, there were nursing specialties recognized, but corresponding to areas of practice more than advanced roles. It was a common point of agreement between the IFNA charter members that there was a gap between the official recognition of education and practice of nurse anesthetists and their actual scope of practice. The nursing bodies were mainly focusing on only technical skills of nurse anesthetists, ignoring what was considered as medical tasks. The physician anesthetists on their side, despite a close collaboration on working sites, were denying the autonomy of nurse anesthetists during official discussions to avoid the risk of confusion of roles. This is still a remaining positioning from anesthesiologists. This

ambiguous situation in re nurse anesthetists' recognition has influenced nurse anesthesia development in different countries. Some associations had to organize themselves separately from Nurses' main organizations, because they were denied their specific nursing practice and considered as doing medical tasks. In the same time, there was an absolute need for anesthesia continuing education for maintaining and updating competencies what nurse anesthetists had to organize by themselves. It is the reason why the first purpose of the international collaboration was about continuing education. In some other countries, the question of the level of education for nurse anesthetists was raised and the minimum entry requirement was to have achieved a secondary level of education in order to assimilate essential notions of physics, chemistry as well as advanced physiology, anatomy, and pharmacology knowledge. In countries where general care nursing was still organized at secondary level, it couldn't match with the demanded level for entering a nurse anesthesia program. It is the reason why in countries with low nursing level of education, the nurse anesthesia programs were open to non nurses, but for students with a high level of education without nursing background. They were then neither listed nor recognized as nurse specialists, but as High Health Technicians, even if in their curriculum, nursing competencies were included and taught, adding by the way a longer time of training. These professionals were then organized separately from nursing bodies. All these aspects went on the table at the time of discussions on bylaws for the IFNA. It was nevertheless decided to privilege the nurse anesthesia profile with an additional training and/or education beyond a basic level of nursing education. On June 10, 1989, 11 charter country member associations of nurse anesthetists were planting the seed of the International Federation of Nurse Anesthetists (IFNA) [1]: Austria, Federal Republic of Germany, Finland, France, Iceland, Norway, South Korea, Sweden, Switzerland, the United States of America, and Former Yugoslavia.

In the described context, the following aims and objectives were defined into bylaws [1, 2].

► **Article II: Philosophy** The International Federation of Nurse Anesthetists is an international organization of nationally registered nurses with special formal and/or actively pursuing a formal education in nurse anesthesia. The members of this professional organization are dedicated to the precept that its members are committed to the advancement of educational standards and practices, which will advance the art and science of anesthesiology and thereby support and enhance quality patient care.

Article III: Purpose

The purpose of the IFNA is to promote assistance in the development of strong national nurse anesthesia associations.

Article IV: Objectives

1. To promote cooperation between nurse anesthetists internationally.
2. To develop and promote educational standards in the field of nurse anesthesia.

3. To develop and promote standards of practice in the field of nurse anesthesia.
4. To provide opportunities for continuing education in anesthesia.
5. To assist nurse anesthetists' associations to improve the standards of nurse anesthesia and the competence of nurse anesthetists.
6. To promote the recognition of nurse anesthesia.
7. To establish and maintain effective cooperation between nurse anesthetists, anesthesiologists, and other members of the medical profession, the nursing profession, hospitals, and agencies representing a community of interest in nurse anesthesia.

These objectives have been the permanent direction line for the IFNA until today.

International Standards [1, 3]

One of the first objectives has been to work on international standards, first of education, then standards of practice for nurse anesthetists. An Education and Practice Committee was appointed with experts from different country members. In 1990, the Educational Standards for nurse anesthetists were established. The first important point was to define entry criteria based on basic nursing education. The only international reference for nursing basic education was the one defined by European Council, a larger European collaborative political organization enclosing the European Union. Nursing education was defined with duration of 36 months. Most of the country members had in their own country, before entering the nurse anesthesia program, a request for a nursing experience of at least one year, preferably in critical care, in order to have students with acquired competencies in this area of care. This nursing experience was then included as entry requirement into the standards of education. We then agreed on a list of skills, competencies, and knowledge to be taught and required for practicing as nurse anesthetists. These first standards of Education were published in 1990. A year later Standards of Practice were defined, with a code of Ethics. In 1997, Mrs. Marjorie Peace Lennn, founding President of the Center for Quality Assurance in International Education, stated that the IFNA was the first healthcare Professional international organization to have defined international standards of Education and Practice. The membership grew up very soon with many applications from Europe, but also from Africa, bringing a very different working experience and specific requests. It was then requested to develop some recommendations for safe practice of anesthesia for which we develop Monitoring Guidelines that become very soon Monitoring standards. The first standards have been revised and updated in 2012. The Education committee and the Practice Committee worked together for revising them. A new concept of presentation was decided by using the CanMeds model for health care professionals. The concept is to have the professional included in a multidisciplinary team approach with its own competencies and expertise. Draft standards were shared with the ICN and the revision was adopted in 2012 with ICN temporary endorsement. An improvement of levels of education was requested and the Standards were finally updated in 2016 in their current version.

International Study [4]: About Global Nurse Anesthesia Workforce

In 1990, Maura McAuliffe, a nurse anesthetist from USA, a PhD candidate at the University of Texas, was challenged by her doctoral professor of International Healthcare Policy, Dr. Beverly Henry, to develop a program of research with a global impact. Maura McAuliffe knew that nurse anesthetists were providing the majority of anesthetics in the USA and wondered if it could be the case more globally. The IFNA was just founded and at least county members were reporting about their own anesthesia practice. McAuliffe was introduced to WHO Chief Scientist Dr. Miriam Hirsfield in 1991 and proposed to do global research about anesthesia provided by nurses globally. The WHO accepted to endorse the research and assist in contacting authorities in all countries in the world. The AANA sponsored the research and the IFNA appointed McAuliffe as its Researcher. The study was developed in three phases. The first phase was designed for identifying countries in which nurses were providing anesthesia. Official reporting stated that nurses were providing anesthesia in more than 107 countries out of 200 countries contacted. Phase 2 was focused on scope of practice and education of nurses providing anesthesia, and phase 3 in 1999 was verifying data and evolution during the five years of the study. This study brought evidence that anesthesia services in the world were mainly provided by nurses, even if it was claimed being a physician's task. It was the first documented global research about nursing contribution to anesthesia worldwide [4].

Continuing Professional Development

One of the other objectives of the IFNA is to provide opportunities for continuing Education, and the IFNA organized a World Congress for Nurse Anesthetists, first every three years, and now every four years, expecting to have regional events organized in the period between congresses.

In order to assist our country members and help other non-members, we developed different educational program curricula for Certificate, bachelor's, and master's levels that can serve as models for starting formal nurse anesthesia educational programs. More recently, we developed an Approval Process for Anesthesia Programs (APAP) [5] assessing existing programs of education with three levels of approval, depending on how much they are matching the IFNA standards criteria, partially or in full.

International Relationship and Collaboration

To be recognized as the international voice for nurse anesthetists, it was important to establish close relationship with main international organizations involved in development of nursing care and anesthesia services worldwide.

International Council of Nurses (ICN)

The IFNA was, since the beginning, in contact with the International Council of Nurses (ICN) [1], in order to develop a close collaboration and relationship. Criteria for being recognized as an ICN Affiliate member were quite strict at the beginning, and the geographical requirements for having members in at least five of seven ICN regions couldn't be met in early years. We have nevertheless established a non-stop close relationship, first recognized as an official resource group for nurse anesthesia specialty in 1996, and then, in 1997, being finally the second specialist nursing international organization introduced as Affiliate member. IFNA Standards of Education and Practice have been regularly shared with the ICN, and the IFNA participates in the APN network and events. In 2020, a collaborative work between the ICN and IFNA experts has developed Guidelines on Advanced Practice Nursing dedicated to Nurse Anesthetists, published in 2021 by the ICN [6].

World Health Organization (WHO)

The first contact with WHO was in 1990 with the last chief Nursing Scientist, Dr. Miriam Hirschfield for introducing the IFNA as new global nursing organization of anesthesia providers. The WHO did not anymore recognize any new organization as a collaborative body and we were told that Anesthesia was represented by the World Federation of Societies of Anesthesiologists (WFSA). Unfortunately, after Dr. Hirschfield, Dr.; Jean Yan was until 2009 the last representative of Nurse at high level within the WHO, and when she left, the direct contact became difficult for nurses' organizations even for the ICN. We could participate as individual members to the Global Initiative for Emergency and Essential Surgical Care (GIEESC) meetings, and be involved in the final development of the WHO Check list program. Since Dr. Elisabeth Iro became the New Chief Nursing Officer, we could have closer appointments. One important initiative to which we have participated was to lobby for the World Health Assembly resolution that was passed in 2015 **“Strengthening Emergency and Essential Surgical Care and Anesthesia as a Component of Universal Health Coverage”** [7]. We could participate in many meetings organized by the WHO before in collaboration with Anesthesiologists and Surgeons. Surgical, Obstetric, Trauma and Anesthesia (SOTA) care have to be developed in different countries and National Surgical, Obstetric, Trauma, and Anaesthesia Programs (NSOAP) are in progress. All care providers, including non-Physicians, have to be incorporated into the workforce and service developments.

World Federation of Societies of Anesthesiologists (WFSA)

The World Federation of Societies of Anesthesiologists [8], is the recognized voice for anesthesia services at the WHO, but representing only physicians. It took time to establish a close contact and to have a first meeting together. The first meeting of the

two boards was in 1997, but it emphasized on disagreements upon recognition of mutual competencies. Anesthesiologists wanted to promote that anesthesia is a physician's task, which we couldn't agree with as it is not reflecting the global actual situation. It was nevertheless decided to look at possible collaboration missions concerning anesthesia providers' education and patient safety. The relationship became easier after 2000 thanks to common participations to GIEESC initiatives for the Surgical Check List and further developments around the 2015 WHA resolution. There is evidence that such target cannot be reached without considering the non-physician anesthesia providers, Nurse Anesthetists being the main representatives. The two Boards are now meeting regularly and we collaborate in different initiatives about Patient Safety, Global Anesthesia Workforce, and other key indicators.

European Specialist Nurses Organization (ESNO)

The European Specialist Nurses Organization (ESNO) [9] is a European organization gathering different nursing specialties. In European Union, only General care nursing is regulated for education and practice. All nursing practice beyond general care is not recognized despite many specialties existing. In 1995, the IFNA went in contact with different organizations representing Nursing at European level for promoting the nurse anesthesia specialty. Nursing specialties at this time, even at national levels, were not very well recognized. Many nursing bodies were considering specialties either as a practice of nursing in a specific area of care without any advanced competencies, or as nurses with technical skills. For this reason, many specialties were already organized as transnational associations inside larger Europe. National associations of nurses created the European Federation of Nurses (EFN), formerly called Permanent Council of Nurses, and proposed to different specialists' groups to collaborate first as a networking. Many EFN members were looking at specialists' groups as a fragmentation of the Nursing profession, while these were seeking at being recognized in their specific competencies beyond general care. After a few years of collaboration, specialists couldn't participate anymore as a network and were asked to integrate with the EFN without any decisional voice, as a consequence, specialists founded their own separate entity called the ESNO. The IFNA has been a leader during all the process since first contacts. The ESNO is more and more recognized as a valuable partner with EU authorities. The ESNO represents nurses in the European Medicine Agency Health Professional Working Group. The ESNO is active in promoting the recognition of specialists nurses and furthermore as advanced nursing practitioners.

European Societies of Anesthesiologists and Intensive Care (ESAIC) and European Board of Anesthesiology (EBA)

The Anesthesia physician specialty is represented in Europe by two entities very linked, the ESA gathering, different national societies of anesthesiologists and the

EBA official branch of anesthesiologists, into the European Medical Specialties organization. The IFNA came in contact with these two groups at a moment when anesthesiologists, because of their shortage, wanted to delegate deep sedation for endoscopy acts to Gastro Enterologists, who would themselves delegate it to endoscopy nurses. It has been the perfect opportunity for the IFNA to remind that there were already nurses educated and trained for providing safe sedation and anesthesia, which they were perfectly aware of. The threat of competitive function was blinding them, but they recognized the inappropriate aspect of the proposal and withdrew it. For avoiding such unsafe decision, it was proposed to create a tripartite Liaison Committee with two representatives from each physician organization and four representatives from the IFNA. The committee worked well for a few years and the IFNA could present two profiles for Nurse anesthetists at the European level, depending on the duration and content of educational programs. One model was referring to advanced roles and autonomy as existing in some European countries (Denmark, Iceland, France, Luxembourg, Norway, Sweden, Switzerland, The Netherlands) the second one was for shorter educational programs and limited assisting roles for nurses. Anesthesiologists wanted to promote the second model in priority before introducing the most advanced one. For IFNA representatives, both models corresponding to actual situation in Europe had to be presented at the same time. This situation creates a standby in the relationship that is very much depending on countries' representation into the two physician boards. At the same time, the IFNA appointed a nurse Anesthetist into the ESA Patient Safety committee who is very active and appreciated by committee partners. The ESA has recently changed its name to European Societies of Anesthesia and Intensive Care (ESAIC) as the Anesthesia Medical Specialty in Europe is including Intensive Care into the practice that represents the longer part of the curriculum.

G4 Alliance for Surgical, Obstetric, Trauma and Anaesthesia Care

Associations of Surgeons, Anesthesiologists, and Non Governmental Organizations having surgical missions in Africa after discussions started in GIEESC meetings founded this new organization. The aim is to gather different professions for improving surgical services worldwide according to the WHA 2015 resolution [7].

The G4 Alliance [10] is committed to achieving universal access to safe surgical, obstetric, trauma, and anaesthesia (SOTA) care for all. The IFNA is an active member of this New Alliance and the voice for non-physician anesthesia providers who are essential in SOTA care for the target regions.

IFNA Achievements

The IFNA has now 43 members from all over the world, including two members as associate members, who don't have official nursing background.

► **IFNA Country Members Associations [2]**

America:

Jamaica and United states of America

Africa:

Benin, Burundi, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Liberia, Morocco, Nigeria, Rwanda, Sierra Leone, Tunisia (associate), and Uganda

Asia:

Australia, Cambodia, Indonesia, Japan, South Korea, and Taiwan

Europe

Austria, Bosnia I Herzegovina, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Luxembourg, The Netherlands, Norway, Poland, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey (associate), and the United Kingdom.

IFNA Standards [3] have been widely accepted by each country member association and wider and serve as reference for Nurse Anesthesia education and practice. Standards could be developed thanks to the Education Committee and the Practice Committee composed of experts in nurse anesthesia education and practice with a fair geographical representation. Standards have been developed, reviewed, and updated by these committees before being adopted by Country members associations. An Approval Process for Anesthesia Programs (APAP) [5] has been also developed in order to assess different existing programs of education. As programs can have different duration, contents, and required levels of practice after certification, there are three categories of approval: Registration, Recognition, and Accreditation. While Accreditation level recognizes that the Educational Program is meeting all IFNA standards criteria, the two others depend on partial achievement of criteria. There are 36 programs awarded, 13 at Accreditation levels. The IFNA organizes a World Congress for Nurse Anesthetists [11] every 2–4 years in order to bring opportunities for sharing different experience and providing continuing professional development [12]. Regional events are also organized.

An IFNA Foundation for Research and Education [13] is also available, awarding grants for different projects that could have an international interest for nurse anesthesia developments. Applications can be uploaded from the IFNA website. It concerns research and educational projects, including student and faculty exchange programs.

The IFNA provides support to associations seeking to have the nurse anesthesia education and practice recognized by their national or regional authorities. The IFNA can assist in development of formal programs of education as replacement of on-site training. There are also opportunities for supporting programs that want to move from school to university, from certificate and bachelor's levels to master's ones.

The IFNA has recently reviewed the bylaws and has updated them in accordance with new definitions and objectives: The new definition of Nurse Anesthetist is the one defined into the ICN Guidelines for advanced nursing practice nurse anesthetists [6]:

- ▶ **Article VII: Definition of Nurse Anesthetist** A Nurse Anesthetist is an Advanced Practice Nurse who has the knowledge, skills, and competencies to provide individualized care in anesthesia, pain management, and related anesthesia services to patients across the lifespan, whose health status may range from healthy through all levels of acuity, including immediate, severe, or life threatening illnesses or injury.

There is also one objective that has been added into updated Bylaws [6, 14] for being in accordance with the WHA resolution [7]:

- ▶ To improve access to safe anesthesia care and universal health worldwide.

Global Leadership

Historically, the first anesthesia providers [1] were surgeons' assistants, generally the nun or nurse immediately close by. Nurses have then been involved in anesthesia since the real beginning and even more than 150 years after the first anesthesia experience; they are still representing a large part of the global anesthesia workforce. There is evidence that in rural areas and or remote settings, nurse anesthetists are the only educated anesthesia providers available. Nurse anesthesia has been a model for development of advanced nursing practice [1], demonstrating that nurses educated beyond the level of general care can provide safe advanced care to the population. Recognized as advanced practice nursing specialty, nurse anesthetists have always maintained their autonomy in practice with advanced competencies for assessment, interpretation of monitoring data, clinical signs and decisions in corrective actions for maintaining safe anesthesia. Their advanced knowledge in anatomy, physiology, pathophysiology, and pharmacology is recognized even if regulation can limit their scope of practice. Many polemics are raised because of this dual positioning, as nurse and anesthetist, that doesn't match with a traditional vision making difference between care and cure. The IFNA tries to erase this narrow vision and promotes a collaborative approach for optimizing the quality of care to the population, taking in consideration actual advanced competencies. The synergy is more efficient than opposition, and it takes time to move lines and barriers. The IFNA in this objective supports all actions toward politicians, health deciders, and other healthcare professionals with the aim of improving anesthesia services worldwide and everywhere.

Conclusion

Since 1989, when the IFNA was founded, many objectives have been achieved. The IFNA is the recognized international voice for Nurse Anesthesia and wider for all non-physician anesthesia providers. Even if, historically, nurses were the first

anesthesia providers in many countries, it took years to have this international recognition, first as a nursing specialty, and furthermore as an Advanced Practice Nursing. There is still a lot to do and needs for developing nurse anesthesia programs of education in order to participate in improvement of access to safe anesthesia services everywhere.

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Global Development of Nurse Anesthesia Education from Mid-Nineteenth Century into Today's Advanced Nursing Practice

Marianne Riesen, Jaap Hoekman, and Karin Björkelund

Introduction

There is scarce documentation of early nurse anesthesia practice and education in most member countries of IFNA, except in the USA. With the advent of anesthesia, starting in the mid-nineteenth century, nurse anesthesia education developed from on-the-job training into a profession with a systematic, formalized, tertiary education as it is today. Nurse anesthesia at its beginning was not a specialty but part of nursing education [1]. Most nursing textbooks at the end of the nineteenth and beginning of the twentieth centuries were written by surgeons and included anesthesia [2]. Responsibility and documentation of anesthesia were with the surgeons, while administering was delegated to nurses. They obviously received training in nursing schools and on the job. The change into formalized postgraduate education began in the mid-twentieth century.

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Nurse Anesthesia from the Mid-Nineteenth to the Mid-Twentieth Century

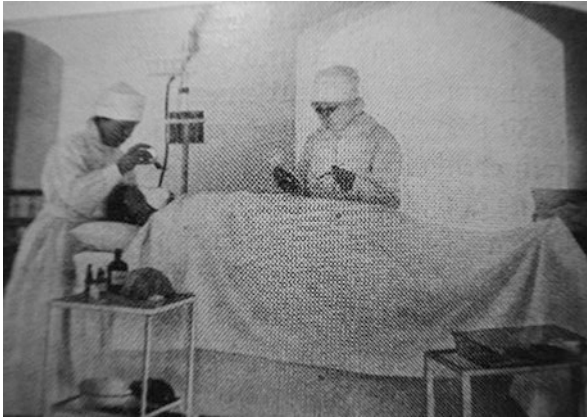
Fundamental changes toward modern science-based medicine at the beginning of the nineteenth century required professional nursing [1]. Up to this time, the care for patients was in the hands of lay people whose job was to alleviate suffering, and preparing patients for their death. The new doctors realized very quickly that their art was due to fail if the patients were not professionally cared for. Nursing was intended to become a significant healing tool of modern medicine. Many nurses up to then came from religious institutions and were convent sisters or deaconesses [2]. Born out of the *caritas*, nursing developed continuously as medicine developed. Soon the first nursing textbooks appeared. Most of them were written by surgeons. Besides anatomy, physiology, and pharmacology, the major part contained the desired traits nurses had to exhibit. Patriarchal structures represented the image society had of women and especially of nurses. Von Roten, in her controversial book “Frauen im Laufgitter” (women in a playpen), explains that this spirit was supported partly by society and partly by the nurses themselves [3]. Private life was normed toward the characteristics of convent sisters. This moral stand was very welcome to justify low payment, long working hours, and maximum dedication. The treatment of the sick was an opportunity for sacrifice for nurses, and a gold mine for the doctors. Unfortunately, it had a negative impact on other predominantly female professions.

Despite Nightingale’s effort to put nursing education into the hands of women [1], early nursing schools in Europe, founded in the late nineteenth and early twentieth centuries, were directed by doctors, mostly surgeons [2]. The new schools were focused completely on medical requirements. The main topics were anatomy, physiology, internal medicine, infectious diseases, surgery, psychiatry, ethics, and anesthesia, which was inherent in nursing education at this time.

According to Franklin, the teaching and learning methods in health care at the time followed more or less Billroth’s (1829–1894) work called *Teaching and Learning the Medical Sciences in German Universities* [4]. The book was the major inspiration for Abraham Flexner’s recommendations to educate health professionals in the USA in 1910. The emphasis was put on the acquisition of core competencies such as biomedical topics at the expense of a more comprehensive understanding of social and community health problems.

After the first anesthesia in Oct. 1846 in Boston, the news travelled very quickly to Europe and other parts of the globe [5]. In Germany, France, Switzerland, Austria, Finland, Sweden, Norway, Denmark, and Iceland, and indeed most European countries, for approximately one hundred years—from the mid nineteenth to the mid twentieth century—the “drip nurse” was part of every image showing surgeries. The nurse who personally initiated the inhalation anesthesia and carefully monitored the condition of the patient is a ubiquitous figure at the head of the operating table on contemporary photographs. Nonetheless, today she has disappeared from collective memory.

The anesthetizing nurse. (In: [6] Hodel A. (1927) pg. 14)



An early German text book on anesthesia, published in 1954, did not mention nurse anesthetists at all in the overview of the history of anesthesia [7]. Atzl and Artner brought the work utensils of the early nurses to light [8]. They have systematically analyzed the stock of nursing objects in museums and other collections in the German-speaking area. Among those objects were the chloroform and ether drip-bottles used by nurses.

German-speaking nursing textbooks from the late nineteenth and early twentieth centuries emphasized how “responsible” the work of “chloroforming” was and stated furthermore that it could only be learned through “lots of practice under the supervision of a doctor” [6, 9–12]. All authors were surgeons except Angelina Hodel [6]. She was a Swiss convent sister and led a nursing school at the time. In all textbooks, the central idea of nursing is defined as observing the patient, which formed the key of nursing training [5]. Observing the patient has continued to be central to this day. The brief statement on “chloroforming” shows that the nurses received training.

According to Tenedios et al., a major factor supporting the development of the nurse anesthesia profession was the reluctance of physicians in the late nineteenth century to engage in the practice of anesthesia [13]. At the turn of the twentieth century, anesthesia did not seem challenging, interesting, or financially lucrative, especially in the United States. Few medical practitioners could make a living of it (particularly outside large cities). A shortage of suitable anesthesiologists and the reluctance of physicians to provide anesthetics in the second half of the nineteenth century encouraged nurses to take on this role in a large number of countries.

During the period between 1915–1930, modern anesthesiology slowly began to develop. As in other countries, nurses played an important role in anesthesia at an early age in Sweden as well, which can be illustrated by the following quote from the Swedish surgeon Petrén (1920) “To be able to fulfill these tasks well, the narcotist (*anesthetist, author’s note*) requires not only reliability, conscientiousness and calmness but also a great deal of anesthesia experience . . . it is certainly safer to be anaesthetized by an anaesthetizing nurse than, for example, by a professor of surgery” [14].

In most European countries, anesthesia remained completely within nursing until about the 1950s. The anesthesia part of the early nursing textbooks contained exact methods of dropping ether, what to prepare, how to maintain an airway, technology to be used, and how to observe the vital signs of the patients [10]. Later ones also included the application of chloroform [12]. Schleich began to mix ether and chloroform in the 1890s because he observed that patients felt better afterward [15]. Nausea and vomiting were the same, but not as long as with ether alone. There was also less saliva and less postoperative bronchitis. The mixture was called Billroth mixture, and it contained chloroform–ether–alcohol in a 1:1:3 ratio.

We certainly can appreciate the skills and knowledge of those nurses when reading about Theodor Billroth's achievements as an example [4]. Billroth was one of the greatest pioneering surgeons. His most famous achievement was a partial gastrectomy in 1881 for cancer of the stomach. Several aspects make this outstanding, the technical side of the operation was achieved in an era with limited anesthesia (only chloroform and ether), the absence of intravenous support, the inability to administer blood transfusions, and the lack of antibiotics to fight infection.

Anesthesia practice developed and those nurses developed their skills and knowledge with it. According to Schloffer, a surgeon in Prague, one of the early anesthesia machines such as the Roth–Draeger, produced in 1910, was commonly in use in 1923 [16]. Those nurses clearly had the technical skills and knowledge to handle an anesthesia apparatus that had already components which are still in use today.



Roth-Draeger 1910 (In: [17] Draegerwerk: History of Anaesthesia at Draeger (1996) page 18)

A Brief Historical Overview of Nurse Anesthesia in Some Selected IFNA's Member Countries

The IFNA is the authoritative voice for nurse anesthetists, supporting and enhancing quality anesthesia care worldwide [18]. IFNA comprises 43 member countries. France has a long history in nurse anesthesia [19]. Anesthesia was also the responsibility of the surgeons and they considered nurses as more efficient and better trained in providing it than, e.g., medical students. The first official course in France was developed in 1948 at the Ecole de Médecine, Paris and it was accessible for doctors and nurses. It lasted a few months. The first formal course for nurses and midwives began in 1950. The history and development toward modern nurse anesthesia in European countries is similar in Sweden, Norway, Denmark, Iceland, the Netherlands, and Switzerland.

Little is known about the early years of anesthesia in IFNA's African member countries. Benin, Burundi, the Rep. of Congo, and Tunisia, which were Belgian or French colonies, have a history of French or Belgian surgeons and nurses providing early anesthesia from the respective countries [20–23].

In 1850, six copies of the Dutch edition of Schlesinger's German book on ether anesthesia, were translated by the official translators of the Tokugawa Shogunate, Japan [24]. Dutch physicians brought chloroform to Japan and it was used in the Inland Wars. After 1869, Japanese medicine came under German influence. Regional anesthesia was dominant over general anesthesia. It was not until 1950, when Meyer Sakland from the USA conveyed modern knowledge of anesthesia, making general anesthesia popular. There have been no non-medical anesthesia professionals in Japan, but the debate has started regarding its potential introduction into Japanese operating theaters. Nurse anesthetists predated physician anesthetists in the United States as anesthesia providers by a number of years. After returning from her anesthesia studies in Heidelberg (Germany), Agnes McGee established, in 1909, the first school of nurse anesthesia, a six-month course at St. Vincent's Hospital, Portland, USA. This first school of anesthesia in the world was often attended by future physician anesthetists as well. The propagation, development, and expansion of the nurse anesthesia profession received new impetus when the USA entered WWI in Europe. Over 1000 nurse anesthetists were deployed to Britain and France. While in Europe, those nurse anesthetists often risked their lives on the front, winning the admiration of the most celebrated surgeons and medical practitioners in the medical world.

In Cambodia, formal nurse anesthesia education started in 1991 [25]. It was initiated by the Ministry of Health together with Médecins Sans Frontières, France. Unfortunately, the education of nurse anesthetists in Cambodia is suffering from funding problems. The courses do not take place regularly. Currently, there are plans to redevelop the education and change it into a bachelor program.

We have no record of early history of nurse anesthesia in Indonesia. Like in many African countries, the Indonesian nurse anesthetists are the major and, in remote parts, the sole providers of anesthesia today [26].

Nurse anesthesia in South Korea has its roots in the aftermath of the Korean War. There were few anesthesiologists in the country [27]. The American Sister Margaret

Kollmer recognized in 1964 a serious lack of anesthesia providers in the country. In 1969, she implemented a training program in hospitals which was based on the American model. It lasted 18 months. Kollmer promoted nurse anesthesia in South Korea for 29 years. Unfortunately, the number of programs declined sharply. Today, only one University is offering a graduate degree. It produces only ten graduates per year, which is very little for a country with 51 million citizens.

In Taiwan surgeons and medical doctors administered anesthesia, but they were replaced by anesthesia nurses and anesthesiologists [28]. The year 1958 was the beginning of nurse anesthesia education and, in 1959, the first nurse anesthetists performed at the Taipei Veteran General Hospital.

In Australia and many countries of the British Empire, anesthesia arrived early [24]. Like in Great Britain, it became a medical discipline from a very early time. Other than in the USA or continental Europe, it enjoyed a high recognition and professionalism. Anesthesiologists and surgeons stood as equals and perspectives for jobs were good. The issue of non-medical anesthesia providers never came up. There were and are high quality assistants in anesthesia, but more within sub-branches of the discipline, such as acute pain management, pre-operative assessment, hyperbaric and diving medicine, etc.

The Beginning and Development of Formal Nurse Anesthesia Education in Selected IFNA Member Countries from the 1950s Till Date

Transformation into an Assisting Role in Anesthesia

The practice of anesthesia began to change significantly in the 1950s, with the introduction of endotracheal intubation [5]. The advent of this, together with new technologies, triggered the handover of anesthesia from the nurse to the doctor in some countries. In Germany and Great Britain, for example, the delivery of anesthetics became a “medical task.” While handling the objects during inhalation, anesthesia was seen as a simple technique that could be performed by women; the new technical skills of endotracheal intubation, including complex apparatuses, could only be expected of men. This view was shared by doctors as well as the organization of nurses. The actual expertise that those nurses brought to the job as nurse anesthetists, namely, the systematic observation of the patient, was addressed neither by the doctors nor by the nurses who participated in this debate. By 1918 in Britain and 1953 in Germany, surgeons were arguing that nurses were not competent to handle technology such as endotracheal intubation—so anesthesiology was removed from their domain of practice.

As in Germany, Great Britain, and many countries of the British Empire, in Austria, where the first anesthesiologists began work in 1952, nurse anesthetists and anesthesiologists worked in cooperation [29]. Over the years, nurse anesthetists were slowly replaced by anesthesiologists and they found themselves in an assistant’s role. This happened despite a course that was held in the 1960s in Vienna and

Innsbruck. The Austrian Association of General Nurses was not interested in supporting nurse anesthesia. There were various efforts to keep it alive, but, in 1997, a new law downgraded the role of those nurses definitely to that of an assistant. The history is similar in Spain, where specialist nurses work under direct supervision (an anesthesiologist is present at all times), on the one hand, and also cover the perioperative domain such as preoperative assessment, post-op recovery, and pain management [30]. In the beginning of the twentieth century, nurses provided anesthesia in Finland [31]. In the early 1950s, a Finnish nursing teacher went to the USA in order to learn more about anesthesia. In the following years (1952/1953 and 1956/1957) the first nurse anesthesia courses started in Finland. In 1963, a formal nurse anesthesia education was introduced in Helsinki followed by another in Oulu (1968). However, in the 1990s, as the basic nursing education changed from a college degree to a university applied-sciences diploma, the nurse anesthesia education was replaced by a course in perioperative care included in the nursing program [32]. Hence, the Finnish education differs from the other Nordic countries with its placement in the basic nursing education. The subject is very general, aiming toward perioperative nursing, and it is very short, taking a total of 20 weeks. After the transformation in education, the profession of the Finnish nurse anesthetist expired. Anesthesia is administered together with an anesthesiologist. The Finnish Association of Nurse Anesthetists (FANA), established in 1963, has worked hard to re-establish a two-year specialist education program with an integration between anesthesia, intensive care, and pain nursing, leading to a diploma [31]. Although there is yet no recognized education program by the Finnish government, an informal special anesthesia program of 30 credits started in 2015 at the Lahti University.

Development into Today's Nurse Anesthesia Role

While the scope of practice transformed into assisting the anesthesiologist in some countries, in many others, nurse anesthesia developed and transformed together with the development of modern anesthesia. McAuliffe & Henry, in the mid-1990s, found out that nurses administered anesthesia in 106 countries providing anesthesia in 77% of rural areas of the world and in 75% of urban areas [33]. Fifty-seven percent were required to have anesthesiologists supervise their work. That means 43% were still working independently at the time of the study. In the remaining countries, all had formal education, but some had to leave their countries to become educated.

In Europe, we find a variety of education schemes for nurse anesthetists despite the Bologna declaration that was supposed to harmonize education throughout the continent [34]. The construction of the European Union (EU) does allow for such differences though. **The EU is a unique global example of real integration of different states**, a reality that includes 450 million people living in 27 countries. The unique feature of the EU is that although the Member States all remain sovereign and independent states, they have decided to pool some of their “sovereignty” in areas where it makes sense to work together [35]. This explains the differences in

education and scopes of nurse anesthesia practice that can be found among European nations. Today, Cabrera & Zabalegui state that there is still a lack of harmonization of master's degree programs in Europe and clinical nursing positions for Advanced Practice Nurses (APN) vary among and within countries, making difficult the mobility and collaboration among APN in Europe [36]. The higher qualified nurse's work is mainly in clinical settings as managers, and in higher education institutions and universities, as professors, teachers, and researchers. Generally, healthcare policymakers in Europe recognize the advanced role and higher qualification of these professional nurses, but there is a lack of legal regulation frameworks to support their autonomy in the healthcare system.

In May 1950, the World Health Organization (WHO) founded the Anesthesiology Centre Copenhagen [37]. Leading anesthesiologists from the UK, Sweden, and the USA were employed to teach a one-year course in anesthesia. Some early European anesthesiologists were educated in the specialty at the center. Björn Ibsen, a pioneer in anesthesiology and intensive care, introduced a completely new form of treatment for polio patients [38]. He performed a tracheotomy to allow overpressure ventilation which became the practice in anesthesia as well. Due to Ibsen's method, the mortality of these patients decreased from 87% to 26%. The many hundreds of students, nurses, and doctors who manually ventilated and cared for the patients displayed true courage of the first degree. Seven decades later, we see a striking parallel to the Covid-19 pandemic [39]. We have seen more patients than ventilators, understaffed hospitals, and a snowballing pandemic.

When talking to colleagues during the 14th IFNA World Congress for Nurse Anesthetists in Sibenik, Croatia (2022), two authors of this chapter, JH and MR, found out that many nurse anesthetists of all participating countries were moved to intensive care units in order to help with the care and ventilation of the large number of Covid-19 patients. The aftermath was still palpable at the congress because many operations in most countries were postponed and the catching up is still going on. It also had a significant impact on the clinical education of nurse anesthesia students. Experienced nurse anesthetists were busy ventilating Covid-19 patients on intensive care units and therefore not available to clinically supervise and educate students.

Scandinavian Countries

In many countries, anesthesiologists took a pragmatic view about nurse anesthetists. At the time, there were only very few anesthesiologists and to rely only on them would have severely limited patient's access to surgery. Therefore, they saw a necessity to train the nurses in modern anesthesia techniques.

According to Ibsen, doctors and nurses had to be specially trained to precisely observe and maintain the patient's vital functions [40]. He came to the conclusion that the education of nurses was not sufficient for the task, and local courses for nurses in anesthesia were introduced in 1957. In 1977, the first national curriculum for nurse anesthesia education was established in Denmark and then revised twice in 1997 and 2017 [37], controlled by the Danish Government and specified in hours for all the different subjects and practice hours [32]. The program, comprising two years of full-time studies (theory 13% and practice 87%), is established at a hospital

level. Course participants are employed by the hospital, while the theoretical education is handled by educational leaders attached to education departments in the different regions. The program is free for the students who receive a salary during the whole education. Danish nurse anesthetists work independently or under delegated responsibility as well as in teams with anesthesiologists [37].

Between the 1930s and the 1950s, in Sweden's nurse anesthesia administration, ether was the main anesthetic agent in use [41]. The first anesthesia textbook appeared already in 1958, written by Matts Halldin [42]. As the number of anesthesiologists were few, the nurse anesthetists had to take on the responsibility for anesthesia [43]. Nurses in the 1950s and the 1960s who chose to stay in nurse anesthesia could, after one year of anesthetic experience, attend to a 5-month course containing theory and practice at the National Institute of Higher Education in Stockholm or Gothenburg. The first course was held in Gothenburg in 1954 and it included anatomy, physiology, pharmacology, and anesthesiology. The lectures were mainly given by anesthesiologists. The course also consisted of a written essay and anesthetic practice. At this time, the Swedish Association of Nurse Anesthetists, later including Intensive Care Nurses, was established [41]. In 1966, the education for registered nurses was changed from 3.5 years, including specialization, to 2.5 years with a following education program of 1 year in a special field [44]. Before entering a specialization program, students had to have at least one year of practice as a registered nurse. The nurse anesthesia programs were organized at the Local Government County Council schools. The curriculum directives, formulated by the Swedish Government, were already very detailed, containing roughly 450 lectures and lessons (about 12 weeks) in subjects such as advanced anatomy and physiology, microbiology, pharmacology, anesthesiology, organization theory, and staff management. Practical training was 32 weeks (1280 hours) in general and special anesthesia care, operating room, emergency or intensive care. Nurse anesthesia programs were transformed into university-based education in the 1970s, followed by an academic-based program in 1997, directed by universities under the regulation of the Swedish Government and the Swedish National Agency for Higher Education [41]. In 2007, Swedish Higher Education adopted the Bologna Process and the specialist programs are since then a professional degree at advanced level, including a one-year master's; "Postgraduate Diploma in Specialist Nursing-Anesthesia Care" and a "Degree of Master of Medical Science (60 credits); Major in Nursing" [45]. The degree is a protected professional title since 2001 by the Swedish Parliament and the National Board of Health and Welfare. Eligibility requirement for entering a nurse specialist program is, since the beginning of 2000, a bachelor's degree in Nursing, consisting of 180 credit points. Since the mid-1990s, the Swedish university-based education system for registered nurses has been adapted to further academic levels, implying the continuation into a doctoral degree in Nursing Science of four years. Swedish nurse anesthetists work independently, as well as in teams with anesthesiologists, under their own responsibility. The program, offered by 15 universities, is free for the students.

The Norwegian education was placed at hospital level for many years with the first formal one-year nurse anesthetist training starting in Bergen around 1960 [46].

A three-month “supplement nurse anesthetist course” began in 1964 and finally, in 1976, after hard work by the National Association of Nurse Anesthetists (ALNSF), the Norwegian Anesthesiologists and local authorities approved the national training curriculum. Although the education plan never received an official approval by the National Government of Health and the National Office of Nursing, it was in use until 1998. The year after, the Norwegian Government decided that all higher education should take place at universities or university colleges and no longer at the hospitals. A national framework establishing national standards for nurse anesthetist’s education stated that nurses, after obtaining their nursing degree (bachelor level), had to work for at least two years as a registered nurse before starting the 18 months of anesthesia training. The program consisted of theory and practice, 50%, respectively. The national framework was revised in 2005 with minor adjustments implemented. Today, most of the universities and university colleges have established a master’s program for nurse anesthetists lasting two years.

In Iceland, the first registered nurse anesthetist started practicing in 1962 [47]. She was educated in Uppsala, Sweden. Several nurses followed her path over the years and were educated either in Sweden or Denmark. From 1968 until 1976, two main hospitals in Reykjavik were responsible for nurse anesthesia training. In 1976, nurse anesthesia was formally recognized by the Ministry of Health. In 1976, an official program was established and it lasted for two years. That program was active until 1990, when the University of Iceland took over and terminated it. It took eight years until the next diploma course started again. It was a two-year program and the entry requirement was a bachelor’s degree in Nursing. From 2003, nurse anesthesia is at master’s level. It was offered every year. Since 2017, two programs are running simultaneously to meet the demand for future recruitments.

Selected Continental European Countries

In France, the Ministry of Health proposed the creation of a certificate for anesthesia assistants [19]. The opposition of the anesthesiologists was fierce, but the Ministry of Health delivered it in April 1960. The course was accessible for nurses holding a state diploma. It lasted 18 months. The year 1972 saw an update of the curriculum, entry, and selection requirements. The course was increased to two years and was available for nurses and midwives. In the 1980s, 20 civil and three military nurse anesthesia programs were in operation. The teamwork of anesthesiologists and nurse anesthetists became the norm. Since 1991, nurse anesthetist is a protected title in France. Due to the adoption of the Bologna process, higher education had to change. The current nurse anesthesia education has been adapted to university requirements. It was re-organized into 120 European Credit Transfer System (ETCS), containing research and clinical and theoretical training at master’s level.

Hossli, the first anesthesiologist at the University Hospital of Zurich, Switzerland, began the first nurse anesthesia training in 1952 in an attic room of the hospital [48]. The training was informal and hospital based (online communication with R Jenni, June 2012). Very soon a formal training scheme was started together with other Swiss University hospitals. Teaching and learning material were put together by

several anesthesiologists involved in educating future nurse anesthetists. It was not before 1983 that the first Nurse Anesthesia textbook in Switzerland was published by Hossli and Jenni, leading nurse anesthetist at Zurich University Hospital [49]. The qualification was eventually recognized by the Swiss Nursing Association after some negotiations. In 1970, the first nurse anesthetist formally graduated. The course lasted and still lasts two years. In 2000, the new basis and regulation for a postgraduate diploma in nurse anesthesia was a decree of the Federal Department of Economics, Education and Research. The 2-year post-diploma course is based on a national educational framework which is to be used by all nurse anesthesia schools of the country. Entry into a program requires a nursing diploma and at least one year practice in a preferably acute setting. Students are employed by a hospital which is associated with a nurse anesthesia program. The school has to be approved by the government. The education consists of roughly 30% theory and 70% practice. It ends with a state diploma and the title is protected. Swiss nurse anesthetists work under indirect supervision and in teams with the anesthesiologists who can delegate an anesthesia to them. One anesthesiologist can serve 2–3 operating theatres, staffed by nurse anesthetists, at the same time.

In the Netherlands Professor Keuskamp produced the first anesthesia textbook somewhere around 1970, followed by a second print in 1976 [50]. In 1978, part two was printed with the title, “Practical application” [51]. Remarkably, both books were written with the subtitle “Handbook for nurses and clinical assistants.” Like in Switzerland, informal training was started in the Netherlands years before it became formal. Only large hospitals did have one or more permanent anesthesiologists [52]. Smaller hospitals used anesthesiologists that travelled between them. It was common that anesthesia was administered by nurse anesthetists. At the beginning, those providers were educated by colleagues, surgeons, and, if available, anesthesiologists. This informal training was mostly organized by the hospitals. During the 1970s, the trainings were evaluated and the National Hospital Association (NZR) organized a more national training which was not regulated by the government though. The Dutch law at that time prohibited any other than a physician to do medical interventions, including anesthesia. Nurses were only allowed to do what surgeons or anesthesiologists allowed them to do. The increasing number of anesthesiologists led to an unpopularity among nurses to work in the operating room because of low payment and loss of independence. The education centers were starting to admit people with backgrounds other than nursing to administer anesthesia. It was illegal. Nonetheless the government allowed it because of the shortages of nurses and the increasing healthcare costs. Finally, the law was changed allowing non-nurses into the courses despite protests by all advisors, nurses, and anesthesiologists. The only body agreeing was the hospital association of anesthetists (Letter to the Members of the NVAM from the formal president MH Bakkers. Nov. 1987). This policy did not change anything. There is still a shortage and the costs are even higher. Thanks to the lobbying of the Dutch Nurse Anesthetist Association (NVAM) to keep the Dutch nursing competencies in the curriculum, there are still nurse anesthetists. More than 60% of them are nurses and this is increasing because of an initiative from the universities and the NVAM. A new

education program was started in 2012 that included a full nursing education program combined with the anesthesia diploma.

Africa and Asia

In all African IFNA member countries, formal nurse anesthesia education started between the 1970s and the 1990s and some even later [53]. In most countries, nurse anesthesia education is formalized. Kelly (1994) did an international study of educational programs for nurses who provided anesthesia [54]. Sixteen African countries responded stating that qualified nurses were admitted to anesthesia programs which were lasting between 6 and 27 months. The anesthetic skills identified were: Pre-anesthetic assessment, induction, maintenance and termination of anesthesia, spinal and epidural blocks as well as emergency service, respiratory care, and post-operative recovery. In many African countries, nurse anesthetists or other well-educated non-physician anesthesia practitioners (NPAPs) are the major providers and, in some countries, like, e.g., Liberia, the sole providers [55]. In Ethiopia, the first program goes back to 1974 [56]. Currently Ethiopia sees 19 nurse anesthesia programs, and their graduates provide 95% of all anesthesia in the country. In 1976, a new policy of higher education was implemented in Tunisia [23]. The goal was to provide the country with NPAPs that had a shorter and more inexpensive education. A University Degree was started to educate anesthesia high technicians. They began to replace anesthesia nurses in 1979. This program does not admit nurses. Tunisia is an associate member of IFNA due to this fact. The course ends after three years with a bachelor degree. Kenya sees a lack of anesthesia services especially in remoter areas [57]. Eventually a competency-based curriculum was established covering general anesthesia, sedation, and regional anesthesia. Competency-based education allows students to gain a lot of experience and to gradually learn to apply the theory in practice.

In Indonesia, nurse anesthetists enjoy the autonomy to provide anesthesia [26]. Services also include: analgesia services in the operating room and outside, perioperative services, pain management (chronic and acute), emergency services, cardiac and pulmonary resuscitation, and emergency services. There is formal education and the practitioners have to be licensed. Like in many African countries, they are the major providers of anesthesia services. The districts are responsible for their education. In the beginning, there was no description of the scope of practice, but in 2010, the national Nurse Anesthesia Association developed standards in cooperation with the Health Human Resources Development and Empowerment Agency of the Ministry of Health. This clarified the scope of practice in the country and the education was matched to the standards. South Korea runs just one University based program, but a current analysis demonstrated a great need for Nurse Anesthetists [27]. The current professionals work under supervision of the anesthesiologists. In Taiwan, data of the national health insurance in 1995 revealed that every anesthesiologist provided at least four anesthetics at the same time [58]. This highlighted the role of nurse anesthetists. In 2006, the Ministry of Health recognized that too few anesthesiologists were educated and, therefore, a robust nurse anesthesia training scheme was needed. For this reason, the national association developed standards.

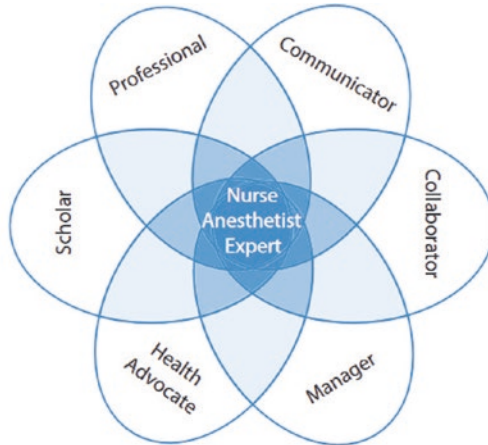
The association also advocated for the recognition and the value of the contribution of nurse anesthetists. In Taiwan, they can provide or assist in all types of anesthesia under the indirect supervision of a physician, not just an anesthesiologist. The national association is dedicated to safe patient care through a multilayered process of developing a national nurse anesthesia certification exam. The written exam was implemented in Dec. 2020 and the oral one in March 2021. In Japan, in 2010, a private organization called Japanese Society of Peri-Anesthesia Care (JSPAC), consisting of nurses, anesthesiologists, surgeons, and joint medical volunteers, was established [28]. A training scheme was started in 2015 called Training System for Nurses to Perform Specific Medical Interventions (SMIS). Although the Japanese Society of Anesthesiologists (JSA) refused SMIS previously in 2019, they agreed to the implementation of specific actions related to anesthesia. Examples of such actions are airway management, mechanical ventilation, administration of medications for circulation, and postoperative pain management.

Harmonizing Nurse Anesthesia Education Worldwide by Using Global Standards

Safe anesthesia and surgical care are not available when needed for 5 billion of the world's 7 billion people [59]. According to a survey the World Federation of Societies of Anesthesiologist (WSFA) in 2017, major deficiencies in the specialist surgical workforce in many parts of the world were found. Results showed that nurse anesthetists and NPAPs working in less well-resourced countries were highly likely to provide direct anesthesia care, either supervised or independently, accounting for a large proportion of the anesthesia workforce in many countries with limited resources, mainly in Africa and Southeast Asia. The nurse anesthetists and NPAP workforce turned out to be a heterogeneous group, ranging from highly trained nurse anesthesia providers, highly qualified NPAPs to health workers with very brief on-the-job training. These practitioners play a vital part of the global workforce, especially in low- and middle-income countries (LMICs). A marked increase in training of anesthesiologists, nurse anesthetists, and NPAPs will need to occur if we are to have any hope of achieving safe anesthesia for all by 2030.

IFNA was well aware of those differences in education early in its history [60]. These differences are not specific to any continent or country. The scope of practice though is very similar in most IFNA member countries, independent of the respective educational concepts. One of the first goals after its charter in 1989 was to develop professional standards. It was recognized that education was important to support practice and enhance patient safety worldwide. The first Education and Practice Standards and Code of Ethics were adopted between 1990 and 1992. The standards were revised in 1996 and 1999, and Monitoring Guidelines were added. From 2010–2016, all standards underwent a major revision meeting requirements for safe anesthesia care and advancement of the profession worldwide [61]. The standards were adapted to professional roles, providing a professional framework for nurse anesthesia to practice, monitoring, and education [60].

Of the various frameworks, IFNA has adopted and adapted the Canadian Medical Education Directives for Specialists (CanMEDS) role model [62]. Permission was obtained from the Royal College of Physicians and surgeons of Canada in May 2012*.



¹ Adapted from the CanMEDS Physician Competency Diagram with permission of the Royal College of Physicians and Surgeons of Canada. Copyright © 2009.

*The signed permission letter can be found under Appendix B page 507 in [60] Ouelette SM, Horton BJ, Rowles JS. The Global Voice for Nurse Anesthesia: International Federation of Nurse Anesthetists (1989–2021).

The 2016 standards were validated by Herion et al. [63]. The study shows a rigorous psychometric approach applying factor analysis to provide evidence of construct validity of the CanMEDS roles and the IFNA standards of practice for nurse anesthetists. It provides evidence that the IFNA standards 2016 are a valuable international framework to define national standards for nurse anesthetists.

The International Council of Nurses (ICN) issued Guidelines on Nurse Anesthetists in 2021 [64]. This commitment is to ensure that by 2030, five billion people will have safe and affordable access to surgical and anesthesia care around the world. The ICN is committed to supporting this ambitious but essential goal. The aim of these guidelines is to provide clarity on nurse anesthesia practice and to ensure that, as a result, the role continues to develop to support safe and affordable anesthetic care to people across the world. The guidelines also contain the latest version of the IFNA standards (2016) (as an Appendix 1 page 33–38).

Competency-Based Education (CBE)

Competence and competency should be used only as they are primarily defined in the Oxford Dictionary of English: “The ability to do something successfully” [65]. The goal of the competency-based approach is ensuring that nurse anesthesia education worldwide was preparing students to be safe practitioners. The Lancet Commission report had identified a series of reforms of education aiming at the acquisition of competencies responsive to local needs but connected globally, which include a culture of critical enquiry and the effective use of information technologies [66]. Reforms should also trigger a renewal of professionalism. Medical and other healthcare education institutions are entrusted with preparing a professional workforce that is capable of and committed to providing reliably safe, timely, effective, efficient, equitable, and patient-centered care [67]. Meanwhile the need for health professionals to master competencies in domains that extend well beyond those that can be tested with a high-stakes multiple-choice-exam is widely accepted. Not only a body of knowledge must be mastered but also the ability to apply that knowledge into service to others, act as professionals, work effectively in teams, communicate compassionately with patients and respectfully with colleagues, collaborate to improve systems of care, and engage in critical reflection and lifelong learning. The CanMEDS was the chosen model because it covers those domains.

The primary intent of competency-based education (CBE) is supposed to provide transparency, so that the profession and the public can be confident that a training program is producing competent professionals who are equipped with the knowledge and skills for practice [68]. As clinical educators implement competency frameworks into assessment programs, they must make competencies concrete so that they may be clearly assessed [69]. Supervisors and trainees need to know which educational targets are important to attain, and they must know what, specifically, will be assessed. The development of Entrustable Professional Activities (EPA) is an important step toward a verifiable practical training. EPAs are those professional activities that together constitute the mass of critical elements that operationally define a profession.

IFNA’s Anesthesia Program Approval Process (APAP)

The International Federation of Nurse Anesthetists is improving anesthesia patient care through a voluntary Anesthesia Program Approval Process (APAP) for schools and programs [70]. It is the result of a coordinated effort by anesthesia leaders from many nations to implement a voluntary quality improvement system for education. These leaders firmly believe that meeting international education standards is an important way to improve anesthesia, pain management, and resuscitative care to patients worldwide. As national governments, education ministers, and heads of education institutions work to decrease shortages of healthcare workers, they would

benefit from considering the value offered by quality improvement systems supported by professional organizations. When education programs are measured against standards developed by experts in a profession, policymakers can be assured that the programs have met certain standards of quality. They can also be confident that graduates of approved programs are appropriately trained healthcare workers for their citizens.

Benefits of APAP

Adopted in 2010, the IFNA APAP was the first international system for accreditation of advanced practice nursing programs [71]. It was based on the education standards that were supported by IFNA's country members. In addition to humanitarian concerns for the world's citizens, anesthesia program directors have identified other benefits of being an APAP program. These are international recognition demonstrating congruency with the mission of the anesthesia program, feedback from anesthesia colleagues with different cultural and ethnic backgrounds, contact with program officials of other countries which are a source of potential collaborative research, and a chance for student and faculty exchanges. Last but not least, the use of international standards, which allows graduates to claim that their program is recognized by a global nurse anesthesia organization affiliated by the International Council of Nurses (ICN). The programs are promoted by announcing that they received an award for complying with international standards of education, thereby increasing the recognition by anesthesia organizations worldwide.

Development of APAP

Work began in 2006–2007, when the members of the IFNA Education Committee with Maura McAuliffe as chair drafted student and faculty pilot evaluation forms that were tested on four nurse anesthesia programs [71]. Faculty from Sweden, the Netherlands, Switzerland, and the USA completed the forms, after which the members of the Education Committee analyzed the results. Following McAuliffe's resignation was Betty Horton. She had held, among many other important positions, a position as director of the Council on Accreditation (COA) in the USA and brought with her extensive experience on the subject of accreditation. During her first Education Committee meeting in Tunis 2008, many questions had to be answered and solutions had to be found to deal with the differences between non-physician anesthesia programs around the globe. Some programs admitted only nurses, some non-nurses, or a mixture of both. Further, anesthesia education globally ranged from non-existent to highly developed courses of study. There were differences in faculty qualification, wide variation of student populations, and varying levels of resources.

Categories of Approval

Those differences in anesthesia education were already obvious in the description of the development into today's Nurse Anesthesia role (paragraph 3.2). To deal with this reality, a philosophy for APAP was written to serve as a foundation for all policies and procedures that had to be developed [72]. It reads: "The International Federation of Nurse Anesthetists (IFNA) believes that it is possible to improve the health and welfare of humanity by promoting international educational standards for non-physician anesthesia programs. Based on this belief and for the purposes of program approval, it is the policy of IFNA to approve programs that admit students who are nurses or who are educated in another scientific area which prepares students to succeed in their anesthesia education. Although IFNA strongly supports a nursing background for admission, it also believes in an approval process that recognizes the differences that currently exist in the educational preparation of health professionals worldwide that have contributed to nurses and non-nurses being enrolled in anesthesia programs. IFNA believes that an inclusive process provides the greatest opportunity to improve anesthesia care to patients now and in the future" [72, page 1]. To assure access to all programs, it was decided that an applying program did not need to be in a country that was an IFNA member [71].

According to the July 2008 Education Committee meeting minutes, three categories were drafted using the APAP philosophy as a guide [71]. The three categories would be Registration, Recognition, and Accreditation. Programs in all categories have to renew the registration/recognition/accreditation every five years.

Registration (Level 1). IFNA Level 1 "**Registration**" would require the submission of an [application](#) for Registration pledging by the anesthesia program to meet the IFNA Educational Standards to the best of its ability [71]. The program's curriculum would be posted on IFNA's website with a statement that IFNA had not approved the curriculum, but it was being posted for information only. The website would note that the program had committed to meeting the IFNA Educational Standards to the best of its ability.

Recognition (Level 2). IFNA Level 2 "**Recognition**" would require the submission of an application for recognition pledging by the anesthesia program to meet the IFNA Educational Standards to the best of its ability [71]. The program would also be required to submit its curriculum and related material for review by the IFNA Education Committee. The information would be audited to determine if it met the IFNA Educational Standards. Following the auditing process, the program's curriculum would be posted on IFNA's website with a statement that IFNA had reviewed the curriculum and determined it substantially met IFNA's Educational Standards determined by an audit of written program materials. Programs that admit non-nurses but meet the IFNA standards substantially can apply for this category.

Accreditation (Level 3). IFNA Level 3 "**Accreditation**" offers two pathways:

IFNA Level 3 **Accreditation** requiring the submission of a pledge by the anesthesia program to meet the IFNA Educational Standards [71]. The program would also be required to submit its curriculum and related material in a written [Self-study](#) for

review by the IFNA Education Committee. The information would also be evaluated by an on-site team of visitors to determine if it met the IFNA Educational Standards. Following the accreditation process, the program's curriculum would be posted on IFNA's website with a statement that IFNA had reviewed the curriculum, reviewed a self-study, conducted an on-site visit to the program, and determined the program substantially met the IFNA Educational Standards. The website would note that the program had substantially met the IFNA Educational Standards as determined by a full review of the program, including a written self-study and on-site review.

The second option is **Deemed Accreditation, introduced in 2017** [71]. Programs approved through this pathway must verify that they have met the official governmental or non-governmental standards for nurse anesthesia education. The program also has to prove that those standards are equivalent or exceed IFNA's Education Standards. A nurse anesthesia program with Deemed Accreditation status will have all the privileges of an accredited program. Level 3 Accreditation is only accessible for programs that admit nurses only.

Eligibility

It is proposed that programs admitting nurses, non-nurses and both types of students would be eligible for approval [71]. This recognizes the differences that currently exist among students enrolled in anesthesia programs in various countries. The ultimate goal of offering an approval process for all types of anesthesia programs is to improve anesthesia patient care by encouraging programs to use IFNA's Educational Standards, irrespective of available local resources. IFNA could also obtain information of all types of non-physician anesthesia education around the globe. All programs would be encouraged to improve patient care through a commitment to the Educational Standards. A recommendation was made that for approval admission requirements must include an education in nursing or another scientific background that prepares students to succeed in their anesthesia program.

The implementation of APAP began in 2010 and IFNA started to accept applications in June 2010 [71]. All categories of approval are free except Level 3 Accreditation. The on-site visit has to be covered by the applying program. This presented a problem for many. IFNA decided to fully support four nurse anesthesia programs by providing a grant.

Till date, IFNA has awarded Registration to 5, Recognition to 17, and Accreditation to 12 programs [73].

Conclusion

While nurse anesthetists in the USA became independent very early, this was not the case in many other parts of the world. In many European countries, e.g., anesthesia was part of nursing education. The nurses in Europe administered anesthesia,

but it was documented as the responsibility of the surgeons, hence the scarce evidence. Nurse anesthesia, therefore, remained invisible for a long time. Still, anesthesia practice developed and those nurses developed their skills and knowledge with it. From about the mid-twentieth century, in most IFNA member countries, nurse anesthesia was no longer part of the nursing education, but emerged into a postgraduate specialty.

Its importance is shown in many low-income countries where nurse anesthetists are the major or even sole providers of anesthesia due to a severe lack of physician anesthetists. These practitioners play a vital part in the global workforce. To consider the differences in education among IFNA member countries, a competency-based educational framework was chosen (CanMEDS). It is ensuring that not only a body of knowledge is mastered but also the ability to apply that knowledge into service to others.

The International Federation of Nurse Anesthetists is improving anesthesia patient care through a voluntary Anesthesia Program Approval Process (APAP) for schools and programs. Meeting international education standards is an important way to improve anesthesia, pain management, and resuscitative care to patients worldwide. National governments, education ministers, and heads of education institutions' work to decrease shortages of healthcare workers would benefit from considering the value offered by quality improvement systems supported by professional organizations. When education programs are measured against standards developed by experts in a profession, policymakers can be assured that the programs have met certain standards of quality. They can also be confident that graduates of approved programs are appropriately trained healthcare workers for their citizens.

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Nurse Anesthesia Recognition: Practice Challenges, Credentialing, and Title Protection

Sandra Maree Ouellette and Susan Smith Caulk

Nurses on the global stage have assumed advanced practice roles for many years. Their history of quality service speaks to organization at the national and global levels, educational advancement and credentialing such as licensure, certification, and recertification. Practice challenges in the early 1900s, predominantly from physicians determined to make anesthesia an all-medical specialty, never ended. Since the roles and practice of the nurse anesthetist overlap with that of physician anesthetists, these challenges are not unexpected. While these professionals have different educational backgrounds, they share similar practice standards. AANA was founded in 1931 when legal challenges in the United States against nurse anesthetists by medicine was too much for individuals to address alone [1]. Lessons learned over the next 58 years positioned leaders in AANA, along with those from ten other nations, to globalize the nurse anesthesia profession in 1989 by founding the International Federation of Nurse Anesthetist.

This chapter begins with a discussion of the evolution, credentialing, and recognition of the American nurse anesthetist. It highlights the global impact of the International Federation of Nurse Anesthetists on international education and practice standards and quality assurance in nurse anesthesia educational programs and its support for member countries seeking licensure, titles, and title protection, leading to recognition at the national level. Key workforce studies with attention to credentialing are briefly summarized and guidelines for advanced practice for the nurse anesthetist, developed by the International Council of Nurses and International Federation of Nurse Anesthetists are highlighted. It closes with a discussion of the bond between national and international organizations, quality in delivery of anesthesia and protection and safety for the patients and future steps for the global nurse anesthesia specialty.

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The Evolution and Credentialing of the American Nurse Anesthetist

Nurses have administered anesthesia in the United States since the Civil War of 1861–1865. In her autobiography, Catherine Lawrence spoke of administering anesthesia in the Second Battle of Bull Run in 1862. She administered chloroform to union soldiers on the battlefield and performed other lifesaving interventions on wounded soldiers such as suturing, tying bleeding arteries and giving resuscitation medications. Chloroform was the anesthetic of choice during that time because it was easily inhaled, acted quickly, and was believed to be more efficient than ether [2]. At the time Miss Lawrence administered anesthesia, it was relatively new. William Morton, an American dental surgeon, had made history at the Ether Dome at Massachusetts General Hospital on October 16, 1846, when he gave the first public demonstration of ether anesthesia during surgery [3]. In her autobiography, Catherine Lawrence stated, “I rejoice that the time has arrived that our American nurses are being trained for positions so important. A skilled nurse is as important as a skilled physician. Life has too often been sacrificed by both professions” [2]. This pioneer was undoubtedly among the earliest of advanced practice nurses in the United States and the first recorded nurse to administer anesthesia in the United States.

While Catherine Lawrence was the first recorded nurse in the United States to administer anesthesia, Catholic nuns played an important role in training nurses and nurse anesthesia specialists. The earliest recorded nurse to specialize in anesthesia in the United States was Sister Mary Bernard who lived from 1860 until 1924 [4]. In the early 1900s, a shortage of trained anesthesia personnel and focus at home on the Great Depression and World War I set the stage for expansion of training and use of nurses to administer anesthesia. Success of these specialized nurses in anesthesia, support by surgeons, and excellence in administering anesthesia was soon to result in challenges by the medical community who viewed anesthesia as the practice of medicine. That belief by physicians has been unaltered over the years and led to many battles regarding the role of the nurse anesthetist in the United States.

Major Legal Challenges Against Nurse Anesthetists in the United States

Between 1911 and 1933, there were three major legal challenges against the nurse anesthetist in the United States. The first challenge to the right of the nurse to administer anesthesia occurred in 1911 when a physician, Francis McMechan, brought opposition of nurse’s anesthesia practice to the Ohio Medical Board. In 1916, the Ohio State Attorney General ruled that only a physician could administer anesthesia, which prompted the closure of the first program for training nurse anesthetists at Lakeside Hospital in Cleveland, Ohio. In 1917, supporters of nurse anesthetist lobbied the Ohio legislature to create an exemption within the Medical Practice Act for nurses, who were appropriately educated and under physician

supervision, to administer anesthesia and it passed. Lakeside Hospital School of Nurse Anesthetists reopened in 1917 [5].

A second major challenge for nurse anesthetists occurred in 1917 (Frank vs. South) when the Louisville Society of Anesthetists suggested to the Kentucky Attorney General that only people with medical knowledge and training should administer anesthesia. Louis Frank, a Louisville surgeon, and Margaret Hatfield, a nurse anesthetist, filed suit against the Kentucky Medical Society and won at the appellate level. It was determined that Margaret Hatfield was not engaged in the practice of medicine when she administered anesthesia [6].

In 1934, Dagmar Nelson was charged by a physician William Vane Charmer-Francis with practicing medicine and violating the California Medical Practice Act by administering anesthesia without a license. The case went all the way to the Supreme Court of California and Dagmar Nelson was given favorable ruling at each level of the case. In favor of Nelson was a legal opinion that prescribing of an anesthetic was in the province of medicine and dentistry. Administering an anesthetic without prescribing did not constitute the practice of either medicine or dentistry. Thus, the California Supreme Court affirmed the superior court findings and, in this ruling, confirmed the legality of nurse anesthesia practice [7, 8, 9].

While these major legal challenges against nurse anesthetist ended favorably, it indicated how vulnerable an individual was compared to the strength that could be found in an organization regarding protection of practice rights. This realization led to the formation of the National Association of Nurse Anesthetists (NANA) in 1931. In 1939, the name was changed to the American Association of Nurse Anesthetists (AANA).

Formation of the National Association of Nurse Anesthetists

Agatha Hodgins founded the National Association of Nurse Anesthetists (NANA) on June 17, 1931, in Cleveland, Ohio. Early after founding, leaders were focused on standardization of education and practice for nurse anesthetists believing that through this mechanism, quality of care and patient safety would be enhanced and practice would be protected [10]. Helen Lamb, Mother of Nurse Anesthesia Education and Chairman of the AANA Education Committee, spearheaded the effort to set accreditation standards for nurse anesthesia schools through their implementation in 1952. Accreditation of nurse anesthesia educational programs began in 1952 and in 1955. The US Department of Health, Education, and Welfare recognized the AANA as the accrediting agency for schools of anesthesia [11]. On June 4, 1945, the AANA administered its first qualifying or certification examination. Standards for Nurse Anesthesia Practice were adopted in 1974. Licensure as a registered nurse is required to administer anesthesia in the USA and certification of the individual has been promoted since 1945 [12]. In 1956, the credential Certified Registered Nurse Anesthetist or CRNA was adopted.

In 1975, changes in criteria for recognition of accrediting agencies by the US Office of Education and a formal challenge from the American Society of

Anesthesiology (ASA) regarding AANA's right to accredit nurse anesthesia educational programs led to the creation of autonomous councils to provide accreditation of programs and certification of individuals. In August 1971, the US Office of Education, Health, and Welfare issued a letter to AANA asking why they should be retained as a nationally recognized accrediting agency citing three deficiencies. At the time, this federal agency was tightening up on enforcement of criteria and many agencies received such letters. Additionally, in 1973, the Office of Education called a meeting between the ASA and AANA to explore ways for anesthesiologists to become more involved in the accreditation process of nurse anesthesia educational programs. The following year, three letters of complaint against AANA's accreditation were filed with the US Office of Education by ASA [13].

In August 1974, the US Office of Education Health Education and Welfare released a change in criteria for accreditation agencies, which was a threat to nurse anesthetists' role in accreditation and certification. There was clearly increasing evidence of challenges by certain anesthesiologists in relation to AANA's authority and capability in the accreditation of nurse anesthesia educational programs and certification of graduates of those programs [14].

The predominant issue appeared to be who would control the education and practice of nurse anesthetists and whether nurse anesthetists should be prepared to function independent of anesthesiologists. Recognizing how critical this challenge was to practice and how important compliance with criteria from the US Office of Education had become, members of the AANA voted at the business meeting to transfer credentialing functions from the AANA to councils. The Council on Certification and Council on Accreditation of Nurse Anesthesia Educational Programs were created and the credentialing functions of the AANA was transferred to these autonomous councils [15].

Continuous professional development has long been a goal for members of the AANA. In 1969, members approved voluntary continuing education and, in 1978, members passed a resolution requiring mandatory continuing education. A proposed by-law amendment that led to organizational restructuring of the association and formation of the Council on Recertification (COR) occurred. This change officially separated AANA membership from the nurse anesthesia certification and recertification processes and officially separated AANA membership from certification and recertification processes. The member could now be certified and use the CRNA designation without being a member of AANA [16].

In 2007, the Council on Certification and Council on Recertification became the National Board of Certification Recertification of Nurse Anesthetists. In 2011, a controversial new continuing education program and process, known as Continuous Professional Certification (CPC), was introduced. While this program underwent multiple changes since inception, it remains the path to continuous certification today. Now continuous certification is the rule and the process must be renewed every 4 years. All CRNAs must be registered as an RN in the state where they practice and in compliance with NBCRNA's CPC to work in the United States. Table 1 lists educational and credentialing milestones associated with the evolution of the

Table 1 Evolutional and Credentialing Milestone for The American Association of Nurse Anesthetists

1931	National Association of Nurse Anesthetists (NANA) was founded by Agatha Hodgins. The name was changed to the American Association of Nurse Anesthetists (AANA) in 1939 and recently changed to the American Association of Nurse Anesthesiology.
1945	The first national certification examination was administered by the AANA.
1955	The US Department of Health Education and Welfare recognized AANA as the accrediting agency for schools of anesthesia.
1956	The credential Certified Registered Nurse Anesthetist (CRNA) was adopted by AANA. Recently, an alternative credential recognized is Certified Registered Nurse Anesthesiologist.
1969	AANA members approved voluntary continuing education and certificates for Continued Professional Excellence were awarded to members who met eligibility requirements.
1971	The first bachelor's degree program in nurse anesthesia began at Mount Marty College Yankton, SD.
1975	The American Society of Anesthesiology formally challenged the AANA's right to accredit nurse anesthesia programs. This challenge, coupled with changes in criteria for recognition by the US Department of Education, prompted AANA to develop alternative credentials entities.
	<ul style="list-style-type: none"> • The Council on Certification of Nurse Anesthetist and Council on Accreditation of Nurse Anesthesia Educational Programs were created and credentialing functions of the AANA were transferred to these autonomous councils. • The Council on Practice was created and its name was changed to the Council on Public Interest in 1988.
1978	The membership of AANA approved mandatory continuing education and the Council on Recertification of Nurse Anesthetists was established.
1978	The first master of science degree in nurse anesthesia education was granted from Kaiser Permanente Nurse Anesthesia Clinical Program by California State University.
1985	The Council on Accreditation of Nurse anesthesia Programs received recognition from the Council on Postsecondary Accreditation.
1987	The Council on Certification of Nurse Anesthetists conducted its first Professional Practice Analysis.
1998	The Council on Accreditation required that all programs be at the graduate level, awarding at least a master's degree by October 1, 1998.
2007	The AANA Board of Directors approved a mandate for the doctoral degree for entry into practice by 2025.
2007	The Council on Certification and Council on Recertification were separately incorporated and became the National Board of Certification and Recertification of Nurse Anesthetists (NBCRNA).
2011	The new continuing education program and process developed by the NBCRNA, known as Continuous Professional Certification (CPC), was announced.
2022	All 130 nurse anesthesia graduate programs at the master's level successfully transitioned to award doctoral degrees for entry into practice.

nurse anesthesia specialty with emphasis on the educational focus [17]. It was reported in September 2022, all 130 Council on Accreditation (COA) nurse anesthesia programs have successfully transitioned to award doctoral degrees for entry into practice. In addition, there are 12 new programs in capability review in 2021–2022 and may open in the near future [18].

The AANA has a long history of challenges and victories throughout its existence and will celebrate its 100th Anniversary in 2031. Lessons learned on this rocky journey and knowledge of AANA history prepared American CRNAs for a pivotal role in the globalization of the profession through formation of the International Federation of Nurse Anesthetists. Much has been accomplished since the founding of the International Federation of Nurse Anesthetists on June 10, 1989. Much more needs to be done, especially with recognition and credentialing of nurse anesthetists and global solution to anesthesia and surgery for all.

The Global Voice of Nurse Anesthesia: The International Federation of Nurse Anesthetists

In 1978, nurse anesthetists from Switzerland and Denmark, Hermi Lohnert and Jan Frandsen, attended the AANA Annual meeting in Detroit, Michigan. Hermi had learned of a “point system” for continuing professional development for American nurse anesthetists and saw an opportunity for international collaboration. Relationships formed and the seed was planted then for international collaboration among nurse anesthetists. The first International Symposium for Nurse Anesthetists was held in Lucerne, Switzerland in 1985 and the second Symposium for Nurse Anesthetists was held in Amsterdam, the Netherlands in 1988. While each country member was most interested in defending its own turf in those early years, it was appreciated there was more that united us than divided us. The International Federation of Nurse Anesthetists (IFNA) was founded on June 10, 1989, in Teufen, Switzerland. Hermi Lohnert from Switzerland is the recognized founder of IFNA. IFNA was founded by 11 national organizations from the following countries: Austria, Finland, France, Germany, Iceland, Norway, Slovenia, South Korea, Sweden, Switzerland, and the United States. Each country is represented by one individual and these representatives, collectively known as the Council of National Representatives (CNR), are the governing body of IFNA [19]. Today, 43 member countries belong to the International Federation of Nurse Anesthetists.

Now That We Are Organized, What Do We Do?

During the first year of IFNA’s existence, the Education Committee was formed. This committee finalized the educational standards for nurse anesthetists in 1990 and they were adopted by the CNR. The decision to develop the educational standards was intended to address the IFNA objectives based on the fact that the educational standards worldwide were very diverse. In succeeding years, the committee kept up its pace by developing international standards of practice which were adopted in 1991, a code of ethics adopted in 1992, and monitoring guidelines adopted in 1994. The monitoring guidelines were changed to monitoring standards in 2002. In 1997, IFNA leaders learned from representatives from

the Center for Quality Assurance in International Education (CQAIE) that IFNA was the only international nursing organization to adopt such standards [20]. All standards underwent major, comprehensive revisions in 2016 and are unchanged since that time [21].

Leaders of IFNA in the early years were leaders in their national organizations, had challenges at home as to education and practice, and believed a priority for the young federation should be education. Due to the vast diversity in quality of nurse anesthesia education around the world and in some countries, lack of educational opportunity, education was a priority. At the fifth World Congress for Nurse Anesthetists held in Vienna, Austria, in 1997, the keynote address was delivered by Dr. Marjorie Peace Lenn, Executive Director, Center for Quality Assurance in International Education, Washington, DC, USA. A recognized leader in global quality assurance in higher education, IFNA leaders listened carefully to her blueprint for globalization of the nurse anesthesia profession [21]. Her guidance through action steps for establishing a national or regional profession and a global profession and continued consultation was very helpful for IFNA in its infancy. Tables 2 and 3 list action steps for establishing a national and global profession. Early IFNA leaders were pleased to see they were moving in the right direction and many of these steps had been accomplished by IFNA. One link was missing and not completed until 2010 [22, 23].

The one missing link in the Lenn blueprint for globalization of the profession was development of a quality assurance process for nurse anesthesia education and professional development programs. The IFNA Education Committee, under the guidance of Dr. Betty Horton, began this work and, in 2010, the Anesthesia Program Approval Process (APAP) was developed and adopted by IFNA [24].

The goals of IFNA's Approval Process for Anesthesia Programs (APAP) are to encourage programs to comply with IFNA's Educational Standards for preparing nurse anesthetists through an approval process that takes culture differences into

Table 2 Action steps for establishing a national or regional profession

1. Come to an agreement among nurse anesthetists within a country or region as to what common standards will define the profession.
2. Organize a regional or national association, if one does not exist.
3. Establish regional educational programs for nurse anesthetists.
4. Assure that the standards for the profession fit into a national system of quality assurance for education and a system of competency assurance for professional practice.

Table 3 Action steps for establishing a global profession

1. Act as an international witness to the need for professional standards in nurse anesthesia.
2. Interact effectively with appropriate regional and international organizations.
3. Act as a liaison to other globalizing professions.
4. Consider earlier, rather than later, developing a quality assurance process for nurse anesthesia education and professional development programs.
5. Monitor and record its own progress through research, publications, and international forums.

consideration. A second goal is to improve the health and welfare of humanity by promoting international educational standards [24, 25].

APAP, launched in 2010, was the first international system for accreditation of advanced practice nursing programs. It was also the only system that provided an avenue for advanced practice nursing programs to earn accreditation for meeting validated international standards [26]. Please refer to Chap. 30 in this book for a comprehensive discussion of APAP.

Credentialing and the Quality Imperative

Core values of the IFNA and endorsement by its component national members forming the federation include processes that advance the art and science of nurse anesthesia and enhance quality anesthesia worldwide. Six of the nine IFNA objectives speak directly to this goal: develop and promote educational standards in the field of nurse anesthesia; recognize eligible anesthesia educational programs through IFNA's Anesthesia Program Approval Process (APAP); develop and promote standards of practice in the field of anesthesia and anesthesia care; provide opportunities for continuing education in anesthesia; assist nurse anesthetists' associations to improve the standards of nurse anesthesia and anesthesia care [27].

Credentialing is a term applied to the processes used to designate that a program or individual has met established standards by an agent, governmental or nongovernmental, recognized to carry out this task. Licensure, registration, accreditation, certification is used to describe different credentialing processes. Credentials are marks of quality and guide employers and consumers of health care as to what to expect from a credentialed professional.

The IFNA Educational, Practice, and Ethical Standards stand as international witness for globalization of the profession in both preparation and practice [27]. Member countries of IFNA may have national standards, but these are not in conflict with IFNA standards. Likewise, quality assurance in nurse anesthesia educational programs through IFNA's APAP program is voluntary and may or may not have national programs' participation.

As far as individual recognition of the nurse anesthetist through licensure and other credentialing processes is concerned, it is recognized that each member country of IFNA exists in its own political and legal environment, and direction offered by IFNA must take these elements into consideration. Professional titles of nurse anesthetists globally, requirements for such titles and title protection are best managed at the country level. Most organizations require practitioners to have credentials before using a title. Once a person successfully passes an entry level examination, for example, they demonstrate they possess knowledge, skills, and abilities to obtain a professional title.

A trend today is the recognition that a person can't be certified for life. With the complexity of an ever-changing science and practice of anesthesia, lifelong learning and recertification or continuous professional certification is critical. The criteria for lifelong learning are often formulated by a national association continuing

education committee and an entity responsible for recertification is appointed to recertify individuals periodically based upon criteria established by the national committee. In the USA, recertification, now continued professional certification (CPC), is mandatory. A CRNA in the USA must hold an RN license in the state where they work, graduate from a nurse anesthesia program accredited by the Council on Accreditation of Nurse Anesthesia educational Programs, pass an entry-level certification examination, and be in compliance currently with the continuing education program as defined by NBCRNA. Since 1986, federal reimbursement is tied to these credentialing steps, and noncompliance with professional mandates interferes with the individual's right to work.

Regulation of the Global Nurse Anesthesia Workforce

The history of the American nurse anesthetists, an advanced practice nurse, is among the oldest and best documented in the world. Leaders of IFNA recognized very early that regulation of the global workforce must be explored. What was found in those early studies indicated great diversity in regulation, recognition, and practice in the global community.

During the IFNA World Congress III, in 1991, held in Oslo, Norway, Dr. Joyce Kelly (USA) participated in a spontaneous gathering of nurse anesthesia educators from 13 countries. They were eager to share knowledge and promote better education for all nurse anesthesia students. During the gathering, participants realized little was known about the education of nurse anesthetists globally and decided a survey was needed to collect as much information as possible about programs. Dr. Kelly volunteered to develop the survey and then collected information on nurse anesthesia programs in 50 countries. The results of this work were published and was believed to be the first international research published on the education of nurse anesthetists [28].

In 1990, IFNA President Ronald Caulk and Vice President Hermi Lohnert went to Geneva, Switzerland, to meet with the ICN Executive Director and with representatives of the World Health Organization (WHO). At WHO, IFNA leaders met with Mrs. Matsumoto who recognized and worked with non-governmental organization (NGO) of WHO. It was soon learned that being formally recognized as an NGO would not only be time-consuming it would also require working with the office informally for a period of several years. Mrs. Matsumoto suggested that Mr. Caulk and Mr. Lohnert meet with Dr. Miriam Hirschfeld, Chief Nursing Scientist, Division of Health Manpower Development. The outcome of that meeting proved to be a challenge.

Neither Dr. Hirschfeld nor the WHO seemed to know anything of the role of the nurse anesthetist in providing anesthesia services worldwide. She wanted to know why nurses should be administering anesthesia when there was a worldwide shortage of nurses and abundance of physicians. She went on to ask why a technician couldn't give anesthesia and asked IFNA representatives to provide her the information in writing about the role of the nurse anesthetist [29].

During this time, the IFNA was approached by an American nurse anesthetist, Maura S McAuliffe, who was planning her requirements for her doctorate. She was interested in doing a study of nurse anesthesia internationally and IFNA was in need of such a study. Dr. Hirschfeld was definitely supportive of the study and proposed that though WHO could not endorse the study, due to lack of funds, they would agree to collaborate in the study. The IFNA appointed Maura McAuliffe Official Nurse Anesthesia Researcher for the IFNA in 1992, and began to seek funding for the study. Since this was to be an ongoing study, it would not be McAuliffe's doctoral project, but she agreed to do the study [30]. The Council on Recertification, AANA, agreed to fund the study and soon thereafter, researchers received word that WHO agreed to endorse the research.

Members of IFNA were discovering that in many countries, anesthesia provided by nurses was not a well-known fact. This comprehensive study entitled *Nurse Anesthesia Worldwide: Practice Education and Regulation*, by Drs. Maura McAuliffe and Beverly Henry, provided much information regarding the role of nurses in anesthesia worldwide. This work was divided into three Phases and was done between 1992–1997. Respondents from 107 countries (55% all WHO world member states) reported that nurses gave anesthesia in their counties, nine countries reported that nurses assist in giving anesthesia, and in 18 countries, the evidence was inconclusive. It was also reported that as much as 77% of anesthesia in urban areas and 75% of anesthetics in rural areas were administered by nurses [31].

Of interest to this discussion, McAuliffe and Henry included in their research 17 items about the regulatory and legislative issues that affect nurses who provide anesthesia care. The research question asked was what are the licensing, certification, and recertification requirements of nurses who provide anesthesia care? Most (93%) of the respondents reported that there were such requirements in their countries, but most reported (66.4%) that they do not have to be renewed. Likewise, most respondents (78.4%) reported that a special license or certification was required to practice as a nurse anesthetist. When asked if the licenses have to be renewed, most (74%) said no.

When asked if there were special licenses or certification requirements for anesthesia assistants, most (82.5%) reported there were not. When asked if there are special licenses or certification requirements for non-nurse, non-physician anesthetists, most reported there were not. Most respondents (92.6%) reported that there are special license or certification for physician anesthetists.

Most of the respondents (74.1%) reported there are hospital rules or regulation in their country that recognized nurse anesthesia practice. When asked if there were hospital rules or regulation that restrict practice, 50% stated yes. When asked if there are governmental regulations that guided anesthesia practice by nurses, most (59.3%) reported yes, but more respondents (74.1%) stated it was the hospital regulations that guide the practice of nurse anesthesia. When asked what changes, if any, would improve the anesthesia practice of nurses, the most frequent response was improved access to continuing education followed by governmental recognition of nurse anesthesia practice. In regards to governmental regulation, a frequent response was the need for more supportive legislation and a need for government protection

because of unfair tactics used by physician anesthetists to control all of anesthesia practice. An additional finding was that although nurses play a vital role in anesthesia delivery worldwide, their contributions often go unrecognized by their governments [31, 32, 33].

The IFNA Practice Committee was formed in November 2010, and its first committee meeting was held in Ljubjana, Slovenia. Both the Education Committee and Practice Committee of IFNA are critical in achieving global goals of IFNA. Revised objectives for the Practice Committee are listed on Table 4 [34]. Pertinent to this discussion is the global survey which defines the scope and practice of nurse anesthetists and other non-physician providers in member countries and credentials necessary to practice and the regulatory body responsible for the credentialing.

The Practice Committee conducted a global survey in 2011–2012 and 2012–2014. A revised survey was developed in 2016 and trialed among new IFNA country representatives. Satisfied with the updated survey, the Practice Committee pushed for new country representatives to complete the survey and existing representatives to update the data so results would be available for publication in 2020. When comparing data from the 2012 survey and 2022 results, an increase in government recognition and licensure was noted. It was also noted that terminology used to describe non-physician providers of anesthesia by the majority (70%) of respondents was nurse anesthetist or anesthesia/anesthetic nurse. Others were described as anesthesia officer, anesthesia technician, anesthesiologist assistant, anesthesia assistant, registered clinical officer anesthetist, or non-physician anesthetist [35].

IFNA is governed by the Council of National Representatives or CNR. Each member country has one representative and an annual country report is submitted every two years. Recent country reports bear witness to the information reported by the IFNA Practice Committee [36]. Among the countries represented in IFNA, diversity remains as to education, practice, recognition, and credentialing. A common thread uniting the group, however, is support of IFNA Standards and quality assurance in educational preparation of nurse anesthetists and other non-physician anesthesia providers through the Anesthesia Program Approval Process (APAP). A strong desire to be recognized for the quality work provided in their country is a stimulus by member countries for governmental or regulatory identification, titles, and title protection. While member countries are at different places on the

Table 4 Objectives for the IFNA Practice Committee

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| 1. Define the scope and practice of nurse anesthetists and other non-physician providers in member and nonmember countries. |
| 2. Identify credentials necessary to practice as a nurse anesthetist in various countries; identify regulatory body responsible for credentialing. |
| 3. Provide a model and effective strategies for continuing profession development. |
| 4. Review, update, improve IFNA standards. |
| 5. Cooperate with the IFNA Education Committee. |
| 6. Recommend speakers and topics to the IFNA Congress Planning Committee. |

continuum with this goal, the need is strong and dedication of country leaders is unwavering. The IFNA stands ready to support and advise member countries as they work to achieve long overdue recognition as a credentialed anesthesia professional.

International Council of Nurses and International Federation of Nurse Anesthetists

Release Guidelines for Nurse Anesthetists

In 2015, the World Health Assembly adopted a resolution intended to strengthen emergency and essential surgical care and anesthesia as a component of universal health coverage. This was the first-time governments worldwide acknowledged and recognized surgery and anesthesia as key components of universal health care. ICN is committed to these goals and supported development of Guidelines for Advanced Practice Nursing for Nurse Anesthetists in collaboration with the International Federation of Nurse Anesthetists. The guidelines were intended to provide guidance of the development of the nurse anesthetists for professional organizations health-care providers, regulators, policymakers, and the public for maintaining and improving quality and safety in anesthesia care. The professional role of nurse anesthetists as advanced practice nurses is identified in these guidelines [37].

In support of credentialing for the nurse anesthetist, the ICN guidelines state credentialing is an essential function to support the practice of the nurse anesthetist. Credentialing is used to recognize the skills and expertise of nurses who are working in an advanced practice role in anesthesia and demonstrates to the public and healthcare system of a professional standard for practice in nurse anesthesia [37].

The credentialing process for nurse anesthetist should be led by a nationally recognized organization, should be reviewed periodically, and must be clear and transparent. Advanced practice nurses, including nurse anesthetists must continue to maintain licensure by a regulatory body responsible for oversight of practice and patient safety. Regulation authorizes a legal scope of practice for the professional and legal use of a title which designates nurses working at an advanced practice nurse level in anesthesia. Title protection for the nurse anesthetist should be a requirement for the regulatory and credentialing process [37].

Next Steps for IFNA

While IFNA has advanced markedly since its beginning in 1989, there is still much work to be done. While some member countries may not be positioned at this time to comply with all aspects of the guidelines for nurse anesthetists developed by ICN and IFNA, work should continue at the national level to make this a reality in the future. In addition, IFNA must be that resourceful and supportive partner that assists all member countries achieve these goals. That can be done by the collective

experience, victories, and failures, of member countries as they steadfastly work toward licensure, titles, and title and practice protection through national regulatory agencies. While there may be differences among countries as to processes and programs, the work is not done until all advanced practice nurse anesthetists have proper recognition for the role they play in safe, quality anesthesia services in their country.

Summary

The evolution of national nurse anesthesia associations, such as AANA began as a result of constant challenges regarding the right of the nurse anesthetist to administer anesthesia. Strength that was found in organizations overcame these challenges through development of high standards for education and practice, advancement in educational credentials, and development of credentialing mechanisms and titles that are now required to practice.

The global voice of nurse anesthetists in the IFNA. Since its beginning, it has worked tirelessly to elevate the quality of anesthesia in all countries through development of educational and practice standards, steps to globalize the profession, and quality assurance in nurse anesthesia educational programs. Requirements to practice rests with the country, but can be guided by IFNA. It is at the country level, supported by the national nurse anesthesia association, that practice requirements such as licensure and titles will be created and protected. It is at this level the global organization, along with the national organization, reaches the individual nurse anesthetist and assists them to stay current with ever-changing trends in education and practice. The individual is then best positioned to serve the public through quality, safe care for all populations, and be recognized as a major contributor in delivery of anesthesia worldwide.

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Universal Health Coverage and Nurse Anesthetists

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Abbreviations

CESCR	United Nations Committee on Economic Social and Cultural Rights
CRNA	Certified Registered Nurse Anesthetist
DCP3	World Bank Disease Control Priorities 3; Essential Surgery
G4	Global Alliance for Surgical, Obstetric, Trauma and Anaesthesia Care
ICESCR	International Covenant on Economic Social and Cultural Rights
ICN	International Council of Nurses
CV-19	SARS Corona Virus 2 (Covid 19)
IFNA	International Federation of Nurse Anesthetists
LIC	Low-Income Country as defined by World Bank
LCoGS	Lancet Commission on Global Surgery
MOH	Ministry of Health
NGO	Non-Governmental Organization
NSOAP	National Surgery Obstetric and Anesthesia Plan
SDG	United Nations Sustainable Development Goals 2030
SOTA	Surgical, Obstetric, Trauma and Anesthesia Care
UHC	Universal Health Coverage

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UN	United Nations
US	United States of America
WHA	World Health Assembly
WB	World Bank
WFSA	World Federation of Societies of Anesthesiologists
WHO	World Health Organization (OMS)

Universal Health Coverage means that all people have access to the health services they need, when and where they need them, without financial hardship. It includes the full range of essential health services... WHO [1]

Background

World leaders committed to achieve Universal Health Coverage (UHC) benchmarks by 2030 as a core health and wellness component of the United Nations (UN) Sustainable Development Goals (SDGs). In 2015, along with the publication of SDGs, the World Health Assembly (WHA), governing body of the World Health Organization (WHO), acknowledged the central role of surgery and anesthesia in achieving health equity when they published Resolution 68.15, “Strengthening emergency and essential surgical care and anesthesia as a component of Universal Health Coverage.” With the promulgation of this resolution, all 194 WHO member states are expected to develop National Health Plans (NHP) for sustainable health system development that includes surgery, obstetrics, and anesthesia service [1–3]. The nurse anesthetist role serves as a fundamental component for assuring any health system can provide the security that people can access the surgery they need, when it is needed.

Surgery has been called the “neglected stepchild of global health” [4], but the essential anesthesia contribution to global surgery is a veiled missing link [5]. WHO recognition that access to essential and emergency surgery is a component of primary care, and therefore UHC requirement, opens a sustainable development policy window for both surgery and nurse anesthesia. The availability of safe surgery is globally unbalanced with more than half of the world’s population, over 5 billion people, lacking access that meets UHC standards [6]. The magnitude of surgical complication and mortality rates along with the adverse results when people are denied surgical cures, make it a public health concern. Although many factors contribute to providing surgical service that meets UHC benchmarks, safe anesthesia care is always requisite. It follows that supporting development and retention of a well-educated, competent, and skilled anesthesia workforce needs to be a component of any NHP. Nurse anesthetists are experienced, professional nurses who have completed additional anesthesia specialty education. Nurses deliver anesthesia all over the globe in high and low income health systems [7, 8]. In some Low-Income Countries (LIC), nurses provide anesthesia coverage for almost all surgeries [9]. This makes nurse anesthetists an important component of any nation’s plan to meet UHC benchmarks and realize the universal right to health. Their presence underpins a system’s potential to provide the security that people can access the surgery they need when they need it.

Anesthesia and Surgery Human Resources

In 2015, the Lancet Commission on Global Surgery (LCoGS) put forward the argument that access to surgical care and meeting benchmarks for UHC established in the SDGs, were interrelated and interdependent. The global disparity in access to quality surgical services is associated with the unbalanced distribution of skilled health workers, including anesthetists. The LCoGS offered evidence by collecting, citing, and interpreting data and solutions by setting global benchmarks for surgical services [10]. The Commission estimated that if benchmarks for skilled personnel and other surgery targets are reached, access to needed surgical care would be raised to a target minimum 80% of people everywhere by 2030 [6]. In resolution 68.15, the WHA identified key points urging health systems to assure that the surgical and anesthesia workforce “attains and retains” staff possessing practice appropriate core competencies [11], but left it to States to strategize the solutions to accomplish this. Validated global competency-based standards exist for nurse anesthesia education and practice. These can be applied to any context and outline the knowledge and proficiency required for nurse anesthesia practice [12]. (See Chaps. 30, 31).

As systems strive to realize UHC, they can measure compliance using accepted yardsticks. One assessable benchmark is the number of providers for surgery, obstetrics, and anesthesia. The LCoGS suggested a conservative standard of at minimum 20 skilled surgical, anesthetic, and obstetrical personnel per 100,000 population available by 2030 and used evidence to link this and other targets to sustainable development. This ratio should be met everywhere not concentrated to urban or better-resourced areas [6]. The British Medical Journal and the World Federation of Societies of Anesthesiologists (WFSA) each proposed anesthesia-specific quotas of 4 or 5 skilled anesthesia providers per 100,000 population [13, 14].

Although medical associations stress the need to increase physician specialist anesthesiologist numbers to reach benchmarks, they also recognize that in most systems, both high income and developing settings, educated and credentialed nurse anesthetists represent a sizable percentage of skilled anesthesia providers [9, 13]. Presently, in some developing systems in LICs, ratios for any skilled anesthesia provider are well below the 5:100,000 population threshold designated to minimally meet benchmarks. In Liberia, for example, in 2021, despite MOH commitment to developing the anesthesia workforce, physician anesthesiologist density was reported at 0.02 per 100,000 and the nurse anesthetist density at 1.56 per 100,000 [9]. For any system with a critically low number of skilled anesthesia providers, guaranteeing access to the surgical component of UHC is impossible.

Some MOHs recognized the effect insufficient skilled anesthesia providers can have on a system’s ability to meet UHC surgery benchmarks based upon the LCoGS and WFSA indicators. A few MOHs have supported specifically designated targets for improving the quality and quantity of the nurse anesthesia workforce in their NHPs. As health policymakers develop strategies to meet SDG benchmarks, including UHC, they recognize the significant role specialty trained advanced practice nurses play [15–17].

Nurse anesthetists build on their education and experience as professional nurses to view the care they deliver as a part of total patient care, not limited to intraoperative period. Their competency-based specialty knowledge and skills prepare them to support health systems beyond the operating room, optimizing patients' conditions before surgery and relieving pain and suffering postoperatively. Their nursing backgrounds make them uniquely qualified to provide additional adjuvant services. During the ongoing CV-19 pandemic, nurse anesthetists and student nurse anesthetists, who are already qualified nurses, played key roles caring for patients with respiratory compromise. To function in the emergency room, and respiratory care areas, nurse anesthetists draw on their foundation nursing training to apply their specialty skills to interprofessional, often life-sustaining, patient care wherever it is needed [18]. With grounding in nursing fundamentals and practice experience, nurse anesthetists are well positioned to play a significant role in the realization of UHC. Their presence makes any health facility better able to nimbly adjust to provide the services that assure access to care when it is needed.

Universal Health Coverage and the Universal Right to Health

To operationalize UHC takes more than resolutions and good intentions and is linked to progressively realizing the universal right to health. The SDG framers knew that meeting targets required action in numerous domains and could not be accomplished overnight. Right to health is not a new idea, nor simply a humanitarian aspiration, it is a component of international human rights law enshrined in national and international constitutions and statutes as well as professional ethics codes. Human rights can serve as a legal and moral base for health policy decisions. The modern concept trajectory of the right to health progressed from seventeenth century Enlightenment philosophers to the post-World War II Universal Declaration of Human Rights, to the legally enforceable United Nations International Covenant of Economic, Social and Cultural Rights (ICESCR), ratified in 1976. Article 12 of the ICESCR articulates measures for the right to health "the States parties to this covenant recognize the rights of everyone to the enjoyment of the highest attainable standard of physical and mental health." This does not mean everyone will be healthy, it does direct that everyone enjoys the opportunity to attain that "highest ... standard" of health. This definition surely includes timely access to safe essential and emergency surgery and anesthesia for conditions such as Caesarian section, laparotomy, cancer, fractures, neonatal and trauma care, etc.

Knowing surgical care is available supports mental as well as physical health when citizens are reassured that they can access the care they need when they need it. Significantly, health is a positive, foundation right essential for the opportunity to enjoy other rights, such as the right to life, security, education, work, and development. Positive rights, for example, the right to health or education, require contribution and impose a shared accountable duty to respect, protect, and fulfill on States and others. The formal human rights paradigm is a base on which to draw the role nurse anesthetists play in progressing toward rights based UHC [19, 20].

Nurse Anesthetists Fulfill the Required Elements of Human Rights-Based UHC

Nurse anesthetists are health system actors whose roles meet the criteria set forth for measuring compliance with right to health, SDG 3, and the securing of UHC. General Comment 14 of the ICESCR describes the characteristics required of any system to meet right to health accountability criteria. Compliance means a health system's essential services contain interrelated and indispensable elements. It must be *available, accessible, acceptable and of adequate quality* [19, 20]. When viewed through a human rights lens, UHC presents a unifying, measurable standard with moral, legal, and functional significance. Nurse anesthetists contribute to its realization in all the mandated characteristic domains. The elements for which health systems are held accountable are broadly defined in ICESCR and its Comments and can be extrapolated to surgical and anesthesia services and care delivered by nurse anesthetists specifically [20].

SDG number 3 emphasizes that promoting health and well-being is essential for development. In target 8 of SDG 3, it explicitly names UHC as a defined marker for measuring SDG achievement. UHC means that people can access the health care they need when they need it without excessive expense. The specific benchmark for essential and emergency surgical access is that everyone can reach a facility that will provide the care they need within 2 hours at a cost they can afford. This means the facilities are open and they are staffed with personnel possessing the appropriate skills as well as the pharmaceuticals and equipment to perform procedures such as Caesarian section, appendectomy, trauma, and other essential and emergency surgeries without discrimination or incurring financial hardship. Very few, including high income systems, completely satisfy this UHC requirement. Often the rate-limiting step in surgical care delivery in developing systems, once the facility is reached, is the availability of a skilled anesthesia provider [5, 6]. Nurse anesthetists' roles reflect all the essential characteristics. Human rights elements supply elegant core arguments for investing in nurse anesthetists.

Available

How do nurse anesthetists' contributions achieve essential health system human rights characteristics needed to realize UHC? General Comment 14 of ICESCR gives the broad descriptors for the characteristics that determine essential criteria. The first mandated characteristic is that care is *available*. To meet the requirement to make health care *available*, health facilities must be open and staffed with enough appropriately skilled personnel [20]. For even basic surgical services, this would mean a trained anesthesia provider, such as a nurse anesthetist, is present and has the tools needed to deliver care.

Besides being critical to conducting emergency and essential surgery, nurse anesthetists contribute to making other aspects of UHC *available*. They deliver

emergency airway and resuscitation care throughout health facilities. Their nursing and anesthesia expertise also makes them skilled at techniques of analgesia management for surgical and non-surgical conditions, relieving pain and suffering. Nurse anesthetists possess the technical proficiency and knowledge that make them a resource for any health system when needs arise. For example, their skill proficiency and knowledge of sepsis and disease transmission positioned them to render life-sustaining airway management outside of the operating theater when the normal function of health systems was disrupted by the CV-19 pandemic [18]. Nurse anesthetists are central to a health system's ability to deliver surgical care, as well as emergency and pain management care, that meets UHC benchmarks to assure care is *available* when needed.

Accessible

Nurse anesthetists contribute to achieving the second interrelated human rights element, making health care *accessible* without discrimination. This goes beyond making care at health facilities theoretically available. It means all can use the facilities without impediments, including economic hardship [20]. Even in wealthy systems, nurse anesthetists are the primary, at times the only, anesthesia provider in rural or underserved areas. Their presence, often as members of the community, makes care *accessible* at the community level. They enable *accessible* surgical and emergency care to the underserved or remote. Recent evidence from Kenya shows that having a cadre of well-trained nurse anesthetists increases productivity and profit at district hospitals, enabling access to surgical care where it might not have been available [21].

Being *accessible* also means that patients can understand the care they need and their options. *Accessible* care affords patients autonomous decision-making based on information they can understand. Nurse anesthetists contribute to making health system care *accessible* by using their nursing communication skills in patient examinations, interviews, planning, explaining procedures, and obtaining patient consent for care. The information they impart can remove barriers and help people make informed decisions about accessing appropriate care. Nurse anesthetists may also triage patients and refer them to higher acuity facilities or may consult with specialists to optimize patient conditions for safe care, extending access. Nurse anesthetists support the required accessibility element to provide care without impediments.

Acceptable

Nurse anesthetists provide *acceptable*, skilled anesthesia care compliant with UHC benchmarks. *Acceptable* health care means more than high quality medical care per se. It means that the care available also meets ethical, moral, and legal standards of non-discrimination and shows respect for patient rights [20]. Nurse anesthetists

staff facilities in major cities and in rural centers. They care for patients across the lifespan in all states of health without discrimination. Nurse anesthetists frequently are the primary or only providers in remote areas in developing and developed health systems [5]. When there are insufficient skilled anesthesia providers, essential and even emergency surgery is triaged or may not be available at all. Groups may experience de facto discrimination, since it is generally the marginalized who suffer the disparity. When facilities in underserved areas are staffed with enough nurse anesthetists and other surgical specialists, it is less likely there will be disparity in care delivery or services.

Acceptable care displays an integral moral component. It respects patient needs, preferences, and values. Nursing and nurse anesthesia professional codes encompass *acceptable* care in their ethics standards. The ICN and IFNA codes of ethics explicitly instruct nurses to respect human rights, autonomy, and to practice without discrimination. Complying with professional ethics is expected and integral behavior for a nurse anesthetist [12, 22]. Nurse anesthetists contribute to the acceptability characteristic both by their presence in low resource areas and by the nature of their professional and ethical nursing practice. When all facilities are staffed with nurse anesthetists, they can deliver *acceptable* care that advances toward UHC targets.

Adequate Quality

For a health system to function at a level of *adequate quality*, a sufficient number of competent, appropriately trained, and distributed health workers must be available to staff well supplied facilities [19, 20]. Anesthesia is somewhat unique because safe, high quality anesthesia care is rarely recognized. It can be hidden; surgery patients may be unaware of what the anesthetist does and there are generally no anesthesia cures to record; whereas unsafe or deficient anesthesia care is vividly identified because it can result in tragic outcomes. Although this leaves quality assessment difficult to measure, professional credentialing systems can reassure that uniform standards are being met.

Regulation of practice and education provides an accepted quality model for professionals and is the customary standard for the nursing profession. In virtually all systems, nursing licensure to practice is granted by a formal entity such as a Board of Nursing or MOH that sets entry and continuing licensure requirements. Nurse anesthetists, as advanced nursing practice specialists, often must meet additional advanced practice regulatory standards for their credentials above basic nursing requirements. These may involve additional continuing education or competency testing (see Chap. 31). Validated IFNA standards for nurse anesthesia education and practice apply as guides with context adjustments. In 2021, the ICN promulgated globally applicable Guidelines for the Advanced Practice of Nursing in Anesthesia. These important, vetted guides reassure that there is a global standard that national regulating bodies can use as a point of reference for *adequate quality* [12, 23].

Although our focus is on the human resources that meet *adequate quality* criteria, nurse anesthetists also need support, including appropriately skilled interprofessional personnel, equipment, and pharmaceuticals to deliver *adequate quality* care. The IFNA, WFSA, and ICN guidelines incorporate monitoring and other adjuncts as components of practice recommendations [12, 13, 23]. Core competencies promoted in nurse anesthesia education include developing leadership, scholarship, and advocacy strategies that underlie tactics to support high quality patient-focused care. Aspects of professional nurse anesthesia practice extend beyond service in the operating room to the very essence of healthcare structure. When nurse anesthetists lend their advocacy voices to enlighten policymakers about their practice and the quality measures safe anesthesia requires, it can help make essential health care available to all when and where they need it. In addition to integrating high quality clinical standards, core nurse anesthesia competencies of advocacy, leadership, and scholarship impact the delivery of *adequate quality* care throughout health systems (Table 1).

Table 1 Nurse anesthetists respect, protect, and fulfill required human rights elements for UHC

Essential surgery and anesthesia must be	Examples of the contributions of nurse anesthetists supporting human rights foundation for UHC
Available	<ul style="list-style-type: none"> Staff facilities to deliver anesthesia for surgical procedures. Provide emergency airway/respiratory management. Participate in resuscitations and emergency interventions. Use skills and knowledge to alleviate pain and suffering. Render specialized care in emergencies, such as the pandemic. Nurse anesthesia is a global profession and keep health facilities open and functioning.
Accessible	<ul style="list-style-type: none"> Staff facilities in remote areas. Enlighten patients preoperatively. Guide and refer patients for specialized care. Foster community security by their presence. Provide the security that care will be available when it is needed Provide cost-effective care that supports health systems.
Acceptable	<ul style="list-style-type: none"> Support human rights and autonomy. Preserve non-discrimination. Relieve pain and suffering. Promote specialty care throughout the health system. Provide care across the lifespan when needed. Practice in underserved areas. Nurse anesthetists are cost-effective.
Adequate quality	<ul style="list-style-type: none"> Competency-based education forms the global entry criteria for practice. Licensure assures oversight and professional fitness to practice. International professional standards underlie practice. Continuing education upgrades skills and knowledge. Professional competencies include advocacy to support broad health system improvements.

UHC Benchmarks

Setting and documenting progress toward measurable targets can make legal, moral, scholarly, and political indicators pragmatically applicable. Nurse anesthetists contribute to achieving all the human rights-based required elemental characteristics that underlie UHC, and their presence impacts a system's ability to meet benchmarks. Health facilities need skilled anesthesia providers to assure access to emergency and essential surgery will be available within two hours. Nurse anesthetists fill this role. After being on the sidelines of global health, surgical care is now recognized as a fundamental component of primary care and essential to the achievement of UHC. Most researchers have set the essential and emergency surgery target that 80% of people everywhere have access to needed surgical care within two hours by 2030 [6, 24]. Presently, with well over half of the globe's people lacking access, there is considerable work to be done.

An important aspect of measuring achievement toward globally relevant goals is setting and recording progress toward measurable benchmarks. To reach the 80% of population coverage within the 2-hour target for surgery, a strategic development and distribution plan for surgical and anesthesia personnel is needed. The number of nurse anesthetists, who represent a major fraction of skilled anesthesia practitioners in many systems, is a measure of progress toward the target of a minimum of 4 or 5 skilled anesthesia personnel per 100,000 population. Collecting data on anesthesia coverage calculated to secure the target for access within 2 hours or less for the care they need, when and where they need it, can quantify progress toward this benchmark [13, 14]. Although the main specialty contribution of nurse anesthetists is their role as anesthesia provider for the surgical components of UHC, their specialized nursing skills expand the scope of their potential contributions to UHC. They are integral to the provision of *available, accessible, acceptable care of adequate quality* care that meets criteria for the human rights-based foundation for SDG number 3 UHC. Nurse anesthetists contribute in many spheres as health systems strive to meet UHC surgical access goals. Without nurse anesthetists' contributions, many objectives and targets for UHC will be difficult to achieve.

Scope of the Impact

UHC is an explicit SDG 3 health and well-being target to which UN member states committed when they accepted the UN development goals in 2015. UHC is strategic to health equity. It is integral to realizing most, if not all, the other health and well-being targets that contribute to health and security [25]. Meeting surgery, anesthesia, and obstetric targets for quality, quantity, and access is an important component of actualizing UHC. UHC is an inclusive concept that can help form policy strategy toward many other health SDG 3 targets such as improving maternal and child mortality statistics, diminishing road traffic accident mortality, and disaster risk

reduction. This requires that evidence-based Surgical, Obstetric, Anesthesia, and Trauma (SOTA) targets, as described by the G4 Alliance, are met. Among others, these include access times and sufficient skilled personnel [6, 24].

Health serves as a foundation for achieving other goals, so meeting SDG 3 health and well-being targets underlies achieving other SDGs, for instance, education, gender equity, economic growth, security, and community strength. Training more skilled health workers requires long term commitment and will not happen overnight, even with the best NHPs. It helps to recognize that for ICESCR human rights interventions, by definition, fulfillment requirements can be progressive, never regressing, and leaving no one behind [20].

Nurse anesthetists clearly can play a strategic role in advancing UHC as it relates to essential and emergency surgery access. Their role beyond the operating theater is not as readily apparent or easily calculated. In the WHO 2021 report on progress toward UHC, some indicators slipped from pre-pandemic levels. This was specifically apparent in surgical indicators. In low and high income systems, surgeries were curtailed, clinics were closed, and the delay to care increased during quarantine imposed by pandemic restrictions [26].

In the 2021 UN UHC report, 36% of countries reported disruptions in care during the pandemic and world economic downturn. Primary care, including surgery and emergency services, was impacted significantly, disrupting previous advances in access [26]. Nurse anesthetists contributed to pandemic care even as systems struggled to function. In addition to assuring emergency surgeries could be accessed despite pandemic restrictions and risks, in many systems, nurse anesthetists were deployed to care for patients needing acute respiratory care. They continued to support elements of UHC even when not delivering anesthesia for surgeries [18, 27]. The data-driven 2021 UHC report highlights the underinvestment in skilled human resources for health, leaving little room for adapting to drastic changes in health system demands. Despite the critical contributions of nurse anesthetists toward keeping care available in 2020–2021, the main reason given for disruptions in primary care, including surgery, was insufficient staff, highlighting the need for systems to invest in human resources for “normal” times in order to be prepared for emergencies [24, 26].

Nurse Anesthetists, UHC, and Health Governance

When care is universally *available, accessible, acceptable* and of *adequate quality*, no one is left out and the universal right to health is realized. Attention to surgery and anesthesia as components of primary care essential to meeting UHC targets gained momentum after 2015. With official recognition of the role global surgery and anesthesia play in UHC and development, a window of opportunity for policy priorities opened. All 194 WHO member states committed to set priorities for improving surgical access as a component of UHC. That year also saw the publication of the comprehensive LCoGS report setting goals for global surgery 2030 and associated meeting those goals with sustainable development. The first volume of

the third edition of the World Bank (WB) Disease Control Priorities; Essential Surgery (DCP3), along with WHA Resolution 68.15 and the promulgation of the UN SDGs that include UHC, rounded out a series of widely distributed and influential publications supporting the intrinsic role of surgery in primary care and UHC. The dissemination of all of these gave direction and imperative for governments to focus on developing surgery and anesthesia, including anesthesia personnel, as part of NHPs [1–3, 6, 26, 28]. Expert and evidence-based arguments demonstrated that investing in surgery and anesthesia can serve as a foundation for achieving other SDGs such as health security and poverty reduction. They demonstrated that investing in surgery makes sense for the health of people and economies [6, 21]. Some NHPs included National Surgery Obstetric and Anesthesia Plans (NSOAPs) as discrete sections of their NHP [15, 28, 30]. Guided by the LCoGS, primary plan targets should include access to essential surgery and development of specialist surgical workforce, including anesthesia providers [17]. Some plans specifically include measurable achievement benchmarks for the skilled anesthesia workforce, including the investment in training to increase the quality and quantity of nurse anesthetists [15, 29].

No discussion of meeting UHC targets is complete without referencing another essential attribute to *accessible* and *acceptable* care, affordability. In HIC systems, where high costs and catastrophic expense are threats to realization of UHC, surgical services may be physically available, but may not be *accessible* or *acceptable* because the care incurs impoverishing costs for patients, families, and communities. Nurse anesthetists have been shown to be cost-effective, highly skilled anesthesia providers and often staff remote or less frequently utilized facilities, even in the wealthiest systems. Providing surgical anesthesia care and emergency coverage where it might be unavailable without them, makes rural nurse anesthetists important to the feasibility of actualizing UHC [29, 31]. In developing systems, evidence shows that staffing district centers with trained nurse anesthetists increases the availability of surgical services [21]. Utilizing nurse anesthetists makes sense from the system-wide economic vantage since it takes less time and expense to train them than it does physicians, they are educated to be full-service practitioners who are already professional nurses, and usually their salaries are lower than other anesthesia providers [30]. In rural areas, they are essential to making surgical care available. Because they are frequently community members themselves, they contribute to healthy communities and well-being, letting citizens know high quality care will be there when needed. The words of one rural Certified Registered Nurse Anesthetist (CRNA) in the US captured the composite requirements of UHC when he described his practice; “CRNAs give high-quality, safe anesthesia, we’re cost-effective, and we’re there to give the right care at the right time” [33].

In developing systems, specialty trained physician anesthesiologists are in short supply. There has been some investment in training more of them. To secure specialty anesthesia training, physicians are often forced to leave the country supporting them, possibly for years. During foreign training time, they are a loss to the local system and getting formal instruction in another country can incur significant cost [32]. For their training, nurse anesthesia students, in contrast, are generally

educated in their home system under the direction of nurse anesthetist educators and preceptors. They are licensed nurses before they start anesthesia training and continue to provide care as student anesthetists in the domestic health system. Investment in improving the quantity and quality of nurse anesthetists by committing to support their specialty training and retention in NSOAPs sustains both short- and long-term UHC goals toward providing health care when and where it is needed.

Nurse Anesthesia Advocacy Model to Advance UHC

Nurse anesthetists play a significant global role in assuring that UHC benchmarks are reached. They are important providers in wealthy and less developed systems. They provide the safe anesthesia that can increase surgical capacity and access to surgery and emergency care. Human resources for global surgery are severely deficient in many systems [6, 34]. Although all skilled surgical practitioners, surgeons, anesthetists, obstetricians and nurses are needed, the lack of skilled anesthetists is often the rate-limiting factor for developing a sustainable program of surgery in LICs [5]. When enough anesthetists are available, they support the development of surgical services as MOHs incorporate surgery as primary care and a component of SDG #3 and UHC. States and their funding sources are key to supporting the nurse anesthesia profession and integrating the crucial role anesthetists play in achieving UHC and other SDGs. The bottom line is when skilled anesthesia providers are not available, people do not have access to the surgical care they require. Nurse anesthetists can do more than deliver safe anesthetics to support realization of UHC by advocating and educating to show policy-makers and donors their central role in meeting sustainable health and wellness goals and reaching UHC benchmarks.

When NSOAPs support the development of the skilled nurse anesthesia workforce, they are following a compelling paradigm built upon an internationally accepted legal, moral, and scholarship foundation (Fig. 1). International human rights law and, specifically, the ICESCR universal right to health, provide the legal and philosophical base for the imperative to improve surgical and anesthesia service to assure access to the “highest attainable standard of ... health and well-being...” [20]. Global governing bodies, the UN, the WHO, and the WHA, gave form to the human rights template when they linked access to surgery to UHC and sustainable development [1–3]. International nursing and anesthetist associations, ICN and IFNA, have promulgated global guidance for the profession, while the LCoGS supplied evidence-based solutions, including human resource benchmarks for global surgery [6, 10, 24]. At the local level, MOHs and other health system governing bodies who design the NSOAPs interpret the global moral and legal foundations along with professional guidance into their local context to actualize UHC. Their mandate is to guarantee that everyone can access the surgical care they need within 2 hours [25, 29]. Prioritizing development of the skilled nurse anesthesia workforce is a key part of any plan aiming to meet surgical targets for UHC.

Global IFNA standards and ICN Advanced Practice of Nurse Anesthesia Guidelines model their recommendations on education and practice criteria that

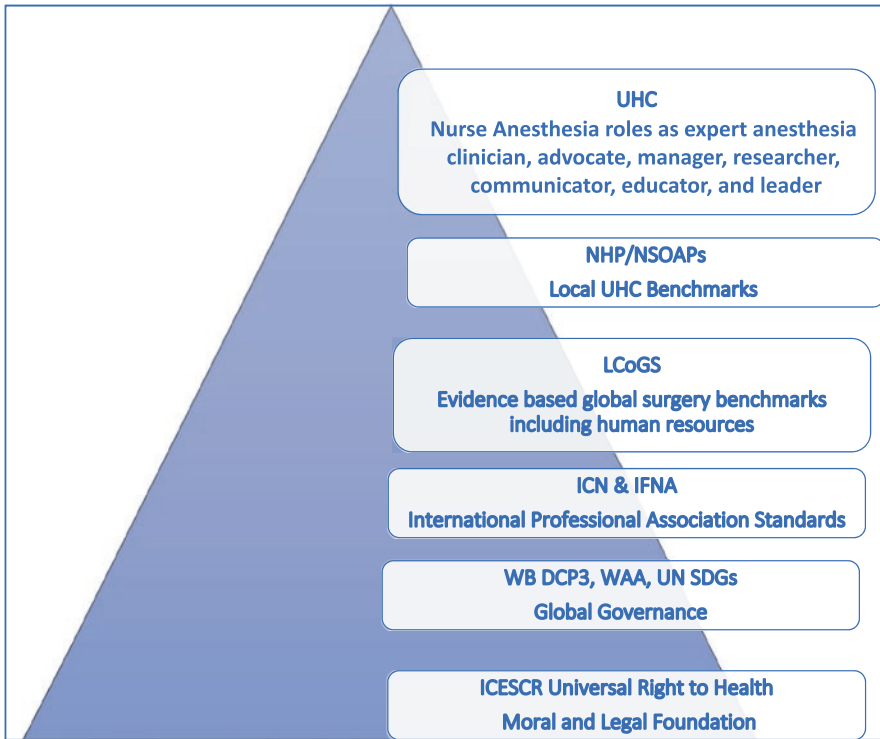


Fig. 1 Legal, moral, and scholarship trajectory supporting global nurse anesthesia contributions to UHC

develop professionals whose role extends to interrelated competencies that include advocate, communicator, educator, manager, scholar, and leader and expand the nurse anesthetist’s core role as anesthesia expert [12, 23]. Nurse anesthetists, educated to these global professional standards, can advocate to impact NSOAPs. Policymakers need guidance from clinical experts using their advocacy, communicator, and scholarship skills, when deciding on health system investment priorities that support UHC and health equity. There is a critical shortage of both physician and nurse anesthesia providers in many developing systems, leaving a large deficit in the minimum population ratios that can assure progress toward UHC and access to that unrealized, for many, right to the “highest attainable standard of ... health...” [20].

At the same time, most wealthy systems, referencing their own benchmarks, also claim they have shortages of anesthetists. Despite the well-documented needs, surgery and anesthesia remain underfunded by any standard both in foreign aid earmarks, NGO funding, and MOH distributions. What funding is realized is not well aligned with LIC surgical deficiencies [35, 36]. Donors rarely contribute to anesthesia-specific programs despite demonstrated need for the specialty. Recommendations include allocating health funding to train and retain a sufficiently

skilled anesthesia workforce that includes nurse anesthetists, while also, educating funders to needs and solutions [6, 13, 14, 36, 37]. Professional nurse anesthetists can raise their visibility and show the value of their profession when they engage in advocacy in the public and private sectors.

Nurse anesthetists comprise a global professional community with a potentially large scope of influence. Advanced practice nurse responsibilities play an expanding role in health systems. ICN recognized nurse anesthesia as a global advanced practice nursing specialty when they focused their first published advanced practice guidelines on nurse anesthesia. They acknowledged that some of the ICN guidelines, including entry level masters education for all advanced practice nurses, may be “aspirational” for nurse anesthesia in some countries at this time, but can still inspire health system short- and long-term strategic goals [23]. Along with the SDGs and LCoGS measures, the ICN global guidelines can give MOHs policy direction for building and sustaining the nurse anesthesia profession in any health system context. When international standards are reflected locally, UHC, including universal access to essential and emergency surgery and skilled anesthesia care, can support health equity and security. When everyone has access to the health care they need and can afford it, the universal right to the “highest attainable standard of physical and mental health ...” can be realized.

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Nurse Anesthetists in Action

Jackie S. Rowles and Christophe Debout

Abbreviations

APN	Advanced practice nurse
APRN	Advanced practice registered nurse
CRNA	Certified Registered Nurse Anesthetist
CV-19	SARS coronavirus 2 (COVID-19)
HVO	Health Volunteers Overseas
ICN	International Council of Nurses
IFNA	International Federation of Nurse Anesthetists
IOM	Institute of Medicine
LCoGS	Lancet Commission on Global Surgery
LIC	Low-Income Country as defined by the World Bank
LMIC	Low- and Low Middle-Income Country as defined by the World Bank
MOH	Ministry of Health
NA	Nurse anesthetist
PAP	Physician anesthesia provider
SDG	Sustainable Development Goals
UHC	Universal healthcare
UN	United Nations
US	United States of America

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WFSA	World Federation of Societies of Anesthesiologists
WHO	World Health Organization (OMS)
WWI	World War I
WWII	World War II

Introduction

The role of nurses in the provision of anesthesia was recognized in the mid-nineteenth century when Catholic nuns provided anesthesia for wounded soldiers during the US civil war [1]. Surgeons were key in advancing the nurse anesthetist role as they sought qualified and dedicated practitioners to provide vigilant care for their patients during surgery. Today, nurse anesthetists administer anesthesia, pain management, and anesthesia-related services within each World Health Organization region while serving to increase access to high-quality, timely anesthesia care and surgical services.

History

Use of nitrous oxide was reported in the early to mid-eighteenth century but mostly as a means of social entertainment, although there was some discussion of its potential use in pain relief [1]. Ether was employed as an anesthetic in the mid-nineteenth century and forever more changed the landscape of global surgery and anesthesia. Equipped with a means to manage patient's consciousness, pain, and screams, a growth in the number of surgeries quickly followed. Poor mortality rates necessitated a role entirely dedicated to administering and managing the anesthetic. The role of the anesthetist was not considered a very favorable one. In fact, it was seen as a low-paying, subordinate role, which nonetheless required a high degree of intelligence to manage the patients in an optimal status for the surgeons to be successful [1]. Physicians and medical students were more interested in observing the surgery than the patient's physiologic status resulting in a high degree of mortality. Women were the main caretakers and especially in times of war. It then makes sense that the first nurse anesthetists (NAs) were often Catholic nuns caring for wounded soldiers. In turn, these Catholic hospital sisters began more formalized education of lay nurses as NAs. Nursing textbooks in 1893 included content in anesthesia [1]. Historical records from the late 1800s report nuns educating NAs in the United States, Africa, and Europe. Documentation of nurses administering anesthesia also evidences nurse anesthesia's practice quickly spreading to areas of Africa, Europe, and the Middle East [1–3].

The International Federation of Nurse Anesthetists published a history book in 2021 entitled "*The Global Voice for Nurse Anesthetists: The International Federation of Nurse Anesthetists (1989–2001)*." This book provided an in-depth look at the history of nurse anesthetists' practice in 42 of their 43 country members and was the

first global documentation detailing international nurse anesthesia practice country by country. Additional research has since been completed, and this chapter details nurse anesthesia practice by the World Health Organization regions: Africa, the Americas, South-East Asia, Europe, Eastern Mediterranean, and the Western Pacific.

An unpublished 2018 survey by the International Federation of Nurse Anesthetists reported more than 18 titles used to describe a nurse anesthetist. Survey results revealed the most utilized and recognized title: nurse anesthetist [4]. In healthcare, a title is used to describe one's position or identify their work. Regardless of the educational background or title, the practice of any anesthesia provider must meet a common standard of care. Standards of care are developed in a multitude of ways, most commonly within regulatory bodies, national or state law, professional organizations, and expert panels, and are based on best scientific research evidence. Scope of practice encompasses the arena of knowledge and skills necessary to meet and provide the appropriate standard of care for a given specialty, healthcare role, or title. Governing bodies determine the scope of practice based on education, training, skills, and competencies.

Research into Global Nurse Anesthesia Practice

Maura McAuliffe is a CRNA from the United States who served as an official IFNA researcher. She, with colleague Beverly Henry, conducted a 3-year study identifying countries where anesthesia was provided by nurses. McAuliffe traveled to Geneva, Switzerland, to work more closely with the ICN leaders and the World Health Organization (WHO) on her research. The American Association of Nurse Anesthetists Council on Recertification of Nurse Anesthetists funded the research. The research was endorsed by the WHO. Phase 1 surveys demonstrated nurses providing anesthesia in 107 of the then 200 countries in the world. Moreover, this research proved that nurses were anesthesia providers in all three country levels of economic development as well as in all WHO regions. In 1992, Phase 2 surveys were deployed, which identified not only the countries in which nurse anesthetists were administering anesthesia but which types of anesthesia were being performed [5]. McAuliffe summarizes the results of the phase research by stating:

In essence, what the data revealed was that nurse anesthetists from countries in all regions of the world and all level of development were performing all the critical tasks of anesthesia services, some working with physicians and others working without them.— (McAuliffe, 1992)

The third phase of research was a 5-year follow-up survey sent to all who responded in Phase 2. The goal was to validate prior survey findings and to determine if any changes had occurred in education, practice, and regulation of nurse anesthesia practice. Results of this survey reported that few changes had occurred over the prior 5-year period [5].

International Guidelines

The International Council of Nurses (ICN) asked the IFNA to serve as the content expert in the development of advanced practice nursing guidelines for the nurse anesthetist. A task force was formed in December of 2019 to accomplish this goal. These would be the third set of guidelines developed within advanced practice nursing roles, with the nurse practitioner and the clinical nurse specialist having already been completed. The need for the nurse anesthetist to help increase access to surgery and universal health has been documented for years. Unfortunately, the role remains somewhat of a mystery entangled in political debate in many countries. Development of practice guidelines is key to increase the knowledge of government decision makers, regulators, and the public in terms of the benefit and contributions of the nurse anesthetist. In the foreword of the NA guidelines, ICN President Annette Kennedy and CEO Howard Catton not only strongly articulated the purpose of guideline development but also addressed the issue of politics (emphasis added):

*The aim of these guidelines is to provide clarity on Nurse Anesthetists practice and to ensure that, as a result, the role continues to develop to support safe and affordable anesthetic care to people across the world. **It is our hope that through the development of these guidelines, some of the barriers and walls that have hindered Nurse Anesthetists can be broken down. We are convinced that Nurse Anesthetists are one of the solutions to making UHC for surgical and anesthetic services a reality.***

It is acknowledged that for some countries, the requirements outlined in this guidance paper may be aspirational. There are numerous mechanisms and strategies that can be implemented as part of a bridging process to achieve this standard. Nursing and the Nurse Anesthetists role will continue to evolve. This guidance paper seeks to provide the best currently available evidence to support and optimise this role moving forward.—[6]

These comprehensive guidelines address all aspects of the advanced practice nurse anesthetist role: historical role development, role definition, education, regulation/titling, scope of practice, professional standards, and document contributions to care. These guidelines are available via the ICN website.

ICN defines an advanced practice nurse:

Advanced Practice Nurse (APN)

An Advanced Practice Nurse (APN) is a generalist or specialised nurse who has acquired, through additional graduate education (minimum of a master's degree), the expert knowledge base, complex decision-making skills and clinical competencies for Advanced Nursing Practice, the characteristics of which are shaped by the context in which they are credentialed to practice [7].

The ICN-IFNA task force defines the nurse anesthetist (NA):

A Nurse Anesthetist is an Advanced Practice Nurse who has the knowledge, skills, and competencies to provide individualised care in anesthesia, pain management, and related anesthesia services to patients across the lifespan, whose health status may range from healthy through all levels of acuity, including immediate, severe, or life-threatening illnesses or injury [6].

Recognition and scope of practice vary greatly on the international level. Often this is due to a misunderstanding or lack of understanding of who the NA is, what

care NAs actually provide in practice, where NAs administer services (location or practice settings), and what benefits the role brings to a country in advancing the health of its population. Current advocacy efforts are ongoing in multiple countries for recognition of the NA role at the APN level, title protection, educational advancements, and continuing education/continuous professional program development. These efforts are not limited to the NA role but are common to all APN roles. Dissemination of the ICN Guidelines is key to proper recognition, implementation, and progression of the role. These guidelines should serve as a catalyst for appropriate scope of practice setting for NAs in many countries as well as criteria for role expansion (see [Appendix 1: Nurse Anesthetists' Scope of Practice](#)).

The 160+ year history of the nurse anesthetist has resulted in many contributions to health that remain largely unknown to the public as well as to many other healthcare professionals and regulators (see [Appendix 2: Examples of NA Contributions to Healthcare Services](#)).

Role of Professional Organizations

The adoption, at national level, of an anesthesia practice model results from many influencing factors. These models are rooted in the history of the healthcare system and are dependent on the existing structure of healthcare professions in each country [8]. When anesthesia was introduced in the second part of the nineteenth century, nuns and nurses were frequently chosen by surgeons to provide anesthesia to patients. Before World War II, in many countries, anesthesia was not considered as a part of medical practice. Providing anesthesia to patients was not considered an attractive activity for physicians who did not like to be seen as subservient to the surgeon nor did they find anesthesia practice lucrative enough.

During and after World War II, many innovations were introduced in the practice of anesthesia. These changes, combined with the influence of the British model which considers the practice of anesthesia as an exclusive medical domain, attracted physicians to this field of practice. Thus, in many countries, the anesthesia provider model was reconsidered at the request of this emerging physician's group. Two professions were usually directly concerned by this debate: the medical profession, the newcomer in the field, and the nursing profession whose practitioners' expertise was recognized and highly valued by surgeons. Medical and nursing professional organizations were actively involved in these debates in attempts to ensure a favorable decision. Their opinions about the model to be used were frequently different as well as the evidence they use to support their vision [8].

Is the practice of anesthesia to be considered in the nursing field, in the medical field, or in both? Is patient safety jeopardized if the anesthesia provider is a nurse even when he/she is adequately prepared to serve in this role? These types of questions were frequently explored in debates and, of course, the two professional groups give different answers to them. Tensions arose and, in some countries, such as the United States, the decision of judges was part of the decision process [8].

Discussions and tensions were frequently observed within these two professions. For example, in medicine, at the end of the 1940s, surgeons and physicians did not always share the same vision about the ideal anesthesia provision model. Surgeons were leaders in this field. On the other hand, emerging anesthesiologists were seeking to be fully considered as a medical specialist, a status which is associated to higher prestige in the medical profession and better salaries.

In nursing, the introduction of nurse anesthetists was frequently questioned by other nurses and by their professional organizations. The question “Is the practice of anesthesia part of nursing?” was raised in many countries when this new field of nursing practice was introduced. There were countries in which the nursing profession rejected this field of practice which led to the introduction of technicians without any nursing background. In other countries, NAs had sometimes to establish their own professional association to defend their role when they observed indifference or rejection in their national nursing organization. These types of debate have also occurred more recently within the global nursing profession when APNs’ role was introduced in countries where NAs were already in place. The advanced nature of NA’s practice was then examined and was sometimes a source of controversy. The ICN is the authoritative body for global nursing and nursing recognition. Development and publication of the ICN APN guidelines for the NA should validate the recognition of the role at the advanced practice level.

Debates about the typology of anesthesia providers sometimes ended by the adoption of a third option: introducing an anesthesiologist assistant or a technician to help the PAP. Hospital administrators were also frequently concerned by this debate and sometimes have made the final decision about the anesthesia provision model that will be used in organizations they manage. More globally, the healthcare system structure and reimbursement scheme also had influence on the model adopted [8].

Throughout the world, countries answered to these questions differently leading to the adoption of various models:

- PAP alone, with the support of a non anesthesia provider who can be the theatre nurse
- PAP with an assistant AA who is not a nurse
- PAP with NA with various levels of supervision
- NA alone
- Mixed models of providers (team approach) based on the health status of the patient or on the risks associated with the procedure [8]

The implementation and use of these models can vary when manpower shortages occur. In many countries, the medical profession obtained a monopoly of anesthesia provision, yet the number of PAPs was not, and is not yet today, sufficient to respond to the needs of the population. Further, it is often difficult to attract and retain PAPs in hospitals located in rural areas. In these situations, the access to surgery is often compromised and at times non-prepared professionals had to administer anesthesia to patients affecting the safety of care.

Models of anesthesia provision can also evolve, and professional associations certainly have influence in the models utilized. More recently, due to the adoption by the United Nations and the WHO of Sustainable Development Goals (SDG) and the necessity to introduce universal health coverage (UHC) to achieve these outcomes, countries have re-examined their models to improve surgical access. Nonmedical anesthesia providers, frequently nurses, have been identified as additional anesthesia providers in countries where previously only physicians were considered qualified to administer anesthesia [8]. Enlarging the number of anesthesia providers gives better access to the population to surgery or any other procedure requiring anesthesia, including effective pain management during childbirth or other advanced pain processes. With proper educational preparation, nurse anesthetists are well qualified and competent to administer anesthesia and anesthesia-related services, enhancing access to effective and safe anesthesia for patients. Further, even though nurse anesthetists are typically higher paid than their generalist nursing colleagues, their salaries are lower than those of PAPs. Cost reductions can result from a change in anesthesia practice models [8]. Unfortunately, consequences of healthcare economics sometimes create tension between physicians, nurses, and their respective organizations. Physicians may worry about losing money, especially when solo practice authority is given to nurse anesthetists allowing them to work directly with surgeons or dentists and receive direct financial payments. Optimal care of patients and provision of anesthesia care require respect and collaboration between the medical and nursing disciplines.

Validation of Practice

Due to the overlap of anesthesia between medical and nursing practice, NAs have faced numerous political challenges to practice including legal battles declaring anesthesia as the practice of medicine. In 1936, this controversy was put to rest. *Chalmers-Francis v Nelson* (1936) was a California, USA, lawsuit which challenged the legal basis for nurses to practice anesthesia. The court found for the defense, stating that the discipline of medicine did not have exclusivity to the knowledge of anesthetic administration. The court ruled that if a nurse provided anesthesia, the nurse was practicing nursing [1, 2].

Current political challenges often claim that there is a difference between the quality of care provided by an NA and that of a physician. Fortunately, there is evidence to support high-quality care provided by NAs. In fact, quality studies date back to the very beginning of the role development. Alice Magaw (1860–1928) served as a personal anesthetist to surgeons Drs. Charles and William Mayo who dubbed her the “Mother of Anesthesia.” Magaw was so skilled in the administration of open-drop ether that she soon was a draw for nursing and medical practitioners to observe her technique. Further, in 1899, Magaw was the first to publish quality studies on nurse anesthesia practice and did so in a medical journal [9]. She had multiple publications from 1900 to 1906 that highlighted her personal anesthetic practice and experience. Magaw’s 1906 publication reported over 14,000

personally administered open-drop ether anesthetics for surgical anesthesia without one death [10]. For a nurse to have published in a medical journal during this time in history is extraordinary, and she has been called a model for evidenced-based practice [11].

Numerous studies have demonstrated that NAs administer safe anesthesia care without statistically significant difference in patient outcome. In 2008, Dulisse and Cromwell published a research article in the well-respected US *Health Affairs* journal. This study researched anesthesia care provided by Certified Registered Nurse Anesthetists in 14 states that had removed Medicare physician supervision requirements (opt-out states). National patient safety data was analyzed in the 14 opt-out states versus non-opt-out states. The results reported similar complication rates in care provided by CRNAs and physician anesthesiologists [12].

Cochrane reviews are internationally known as a high-quality, evidence-based source of information. Their reviews are recorded in the Cochrane Database of Systematic Reviews, a part of the Cochrane Library. A 2014 Cochrane review was conducted with the goal of determining if nurse anesthetists were as safe and effective in providing anesthesia in comparison to physician anesthetists. The authors of the published review concluded: *“No definitive statement can be made about the possible superiority of one type of anaesthesia care over another. The complexity of perioperative care, the low intrinsic rate of complications relating directly to anaesthesia, and the potential confounding effects within the studies reviewed, all of which were non-randomized, make it impossible to provide a definitive answer to the review question”* [13].

The case for nurse anesthetists as a solution for high-quality anesthesia manpower needs was further strengthened by a 2018 Lancet report. This report *“Mortality due to low-quality health systems in the universal health coverage era: a systematic analysis of amenable deaths in 137 countries”* was eye-opening and revealed a problem heretofore unidentified. Efforts to increase universal healthcare have long centered on access to care. This report uncovered that deaths in LICs due to low-quality care were actually greater than deaths from non-utilization of healthcare services [14]. The obvious questions are how and why. The most logical answer can only be explained as inadequate education, training, skills, and competencies of those providing care.

Task Shifting Is Not Task Sharing

Use of the term “task shifting” began in 2007 when the World Health Organization (WHO) identified and reported a persistent shortage of healthcare workers. The goal was to find a way to increase the number of trained providers to improve access to care. There was particular concern about the need to increase care in sub-Saharan Africa where the HIV/AIDS prevalence was epidemic. Following the UN Special Session on HIV/AIDS, the WHO introduced a plan entitled “Treat, Train, Retrain”

or TTR [15]. This plan was primarily designed to address the increased requirements for healthcare to HIV/AIDS patients. Additionally, the WHO developed guidelines on task shifting, which was defined as appropriately moving specific designated tasks to new or other healthcare workers who had less training and qualifications. Over the years, the term task shifting has been applied in many instances to movement of skills and/or care from physicians to nonphysician providers. Scope of practice for disciplines evolves and grows. The term task shifting does not apply to nurse anesthetists. As covered in previous chapters, the discipline of anesthesia developed as a practice of nursing and of medicine. The key point is that nurse anesthetists have been providing care for over 160 years. From the very beginning, NAs have been educated and trained to provide anesthesia care and related services. The provision of anesthesia care and services by a NA is *not* task shifting. In fact, there have been publications with physician anesthesiologist authors who speak about “*task sharing*” [16]. Task sharing more appropriately describes the interrelated and advancing practices of many healthcare disciplines.

Nurse Anesthetists Rise to the Occasion: CV-19

COVID-19 turned the world upside down throughout every nation and every area of healthcare. Anesthesia providers were one of those at the very front of the front lines in both emergent and extended care delivery. Each patient encounter put the NA in a direct line of risk. Nurse anesthetists were particularly an important part of care delivery as they stepped outside of operating suites and were deployed to numerous areas to provide care. No matter where the geographical location, NAs were found to be working on house intubation teams, providing critical care nursing skills in intensive care units, turning recovery rooms and operating rooms into critical care units, serving as respiratory consultants in intensive care units, and working in emergency rooms, COVID testing, and immunization centers. The abilities of NAs to provide high-level, safe, and competent care across a wide range of care further demonstrates the value and skill set of this advanced practice role—the only anesthesia provider who possesses the experience and skill set to provide expert care across this range of patient care needs.

Nurse Anesthetists in Action: Practice Summaries by the WHO Regions

The very heart of the nurse anesthesia profession lies in practice. The desire to care and advocate for patients at a time of extreme stress, fear, and an inability to advocate for themselves fuels the motivation, protectiveness, and satisfaction found within the heart and soul of a nurse anesthetist. The patient is the center of our universe.

Africa

Africa is the second largest continent in the world, consisting of 54 countries within 6 African Union regions. Forty-seven countries are included in the WHO Africa Region with the remaining countries assigned within the Eastern Mediterranean region. According to the United Nations, the estimated population of Africa in July 2021 was 1.37 billion [17]. The World Federation of Societies of Anaesthesiologists (WFSA) 2017 manpower survey reported that the goal for physician anesthesia providers (PAPs) is a minimum of 5:100,000 population for all countries [18]. The Africa Region is one of the regions with the greatest need for anesthetists, as reflected in the 2017 WFSA manpower survey. Thirty-six countries reported less than 5:100,000, with a range of 0–16.18 (South Africa); however, these numbers included nonphysician providers [18]. An updated survey is currently under review by the WFSA Global Anesthesia Workforce Survey Committee, which includes two members of the IFNA leadership. The study data is unpublished, but countries not included in our chapter research but those that have reported NAs in their anesthesia workforce will be included in chapter tables so there is an optimal view of NA practice. It is hopeful that the current data will better represent the number of nurse anesthetists working globally (Tables 1 and 2).

Table 1 Countries with included region research

Countries included in region research
Benin
Burundi
Cameroon
Democratic Republic of Congo
Ethiopia
Ghana
Kenya
Liberia
Nigeria
Rwanda
Sierra Leone
Uganda

Table 2 Countries not included in region research but that report NAs in WFSA workforce surveys, 2015 or current [18, 19]

Algeria	Mali
Burkina Faso	Mauritania
Central African Republic	Mauritius
Chad	Mozambique
Ivory Coast	Niger
Eritrea	Senegal
Gabon	Swaziland
Gambia	Tanzania
Lesotho	Togo
Madagascar	Zambia
Malawi	Zimbabwe

According to research conducted by Rowles and Meeusen [20], historical knowledge of the NA in the African region is first reported in 1939 when nurse anesthetists from Ghana were recruited to serve in WWII. Most nurses were recruited and trained by physicians who needed them to care for their surgical patients. Nigeria and Tunisia report nurses administering anesthesia in the 1950s, while Burundi nurse anesthetists began working in their country by 1959. Morocco and the Democratic Republic of Congo have documented nurse anesthetists working in the early to mid-1960s. In Uganda, anesthesia assistants began working in 1971, but questions of quality care led their country to improve the role to those with health-care experience, and a formal role for nurse anesthetists emerged in 1984. Ethiopian nurse anesthetists began practicing in 1970, while Liberia and Benin started in 1975. Kenya and Rwanda recognized nurse anesthetists in 1990, and Sierra Leone formally recognized nurse anesthetists in 2001. Nurse anesthetists working in Cameroon have forged a recent relationship with the Association of Cameroon Nurse Anesthetists in the United States. A US group of Cameroonian student anesthetists and CRNAs traveled to Cameroon in December 2021 to provide ACLS education and airway skill training. More than 150 nurse anesthetists attended the event, which is expected to be repeated yearly.

Education/Scope of Practice/Challenges

Due to the lack of anesthesia manpower in Africa, and particularly the lack of physician anesthesia specialists, NA's practice is mostly free of political influence and thus NAs practice to the full scope of their education and training (general anesthesia, epidural and spinal anesthesia, peripheral nerve blocks). Full scope of practice allows the public access to essential and emergent anesthesia care and surgical services. Educational programs vary from on-the-job training to bachelor's degrees and to a master's degree under development at the Phebe School of Nurse Anesthesia in Liberia (Table 3).

Regulation

Regulation of nurses is not a common or consistent framework across the African region. In fact, in 2016, the WHO Regional Office for Africa published the *Regional Professional Regulatory Framework for Nursing and Midwifery* in an attempt to standardize regulatory structure and context within the region [21]. They looked to the ICN to define nursing, nursing function, and practice. Thus, the 2021 publication of the ICN advanced practice guidelines for the nurse anesthetist should now serve as the basis for NA education, recognition, and scope of practice setting for all governments and regulatory bodies. Not surprisingly, there are not enough nurse

Table 3 <https://ifna.site/ifna-accreditation-program/>

Africa Region Educational Programs Accredited by the IFNA
Bongolo Hospital Nurse Anesthesia Training Program, Libreville, Gabon
Phebe Nurse Anesthesia Program, Suakoko Bong County, Liberia

anesthesia educational programs in Africa to meet the continent's demands for anesthesia providers. Further, Africa faces challenges that most do not. A lack of consistent electricity, Wi-Fi, medications, equipment, and clean water makes even the most qualified provider to struggle to provide optimal patient care.

Positive Outcomes and Challenges

According to the research by Rowles and Meeusen [20], the numbers of nurse anesthetists within Africa far exceed the numbers of physician anesthetists. The IFNA has 13 country members within the African Union and contacts in several other nonmember countries. IFNA Standards of Education and Practice have been shared across the continent from one nurse anesthetist to another. The nurse anesthesia education program at Kijabe Hospital in Nairobi, Kenya, has trained over 100 nurse anesthetists. Many have moved to serve rural hospitals in Kenya and other East African countries, allowing them the ability to provide much-needed surgical services for their local communities. An article published in 2019 assessed Kijabe graduates who were sent to work in nine rural hospitals within Kenya. The article validated these nurse anesthetists' contributions in lessening the country's anesthesia manpower gap, increasing access to surgery, and positively impacting the economic stability of the hospitals in which they provided services [2, 22]. This program serves as a model for other countries who are seeking to fill gaps in anesthesia care, increase access to surgical services, and positively influence health.

The Americas

The WHO region of the Americas consists of 35 countries plus multiple territories within North, Central, and South America and the Caribbean with a region population of over 1.014 billion [23]. The WFSA 2017 workforce survey reported that the goal for physician anesthesia providers is a minimum of 5:100,000 population for all countries. The 2017 survey results for the Americas report an overall density of PAs of 12.43:100,000. The density data ranges from a low of 0.74 in Haiti to a high of 20.82 in the United States [18] (Tables 4 and 5).

Historical knowledge of the NA in this region dates to the beginning of the US Civil War in 1861, where nurses were providing anesthesia to injured soldiers on the battlefield. The most recognized and advanced level of NA practice lies within the United States, whereas of September 22, 2022, CRNAs currently number 57,834 with 9418 student registered nurse anesthetists [24]. The United States recognizes four advanced practice nursing specialties: Certified Registered Nurse Anesthetists,

Table 4 Countries with included chapter data

Countries included in region research
Jamaica
Puerto Rico
United States

Table 5 Countries not included in region research but that report NAs in WFSA workforce survey, 2015 or current [18, 19]

Countries not included in this region research reporting NAs in WFSA workforce surveys (2015 or current) [18, 19]
Belize
El Salvador
Guyana
Honduras
Nicaragua
Paraguay

Nurse Midwives, Nurse Practitioners, and Clinical Nurse Specialists. The practice of anesthesia in the United States included both nurses and physicians from the start. As the practice advanced, the medical community brought forth numerous legal challenges concerning nurses administering anesthesia, stating that it is a medical practice. None were successful and today, when a nurse administers an anesthetic, it is recognized as the practice of nursing. When a physician administers an anesthetic, it is the practice of medicine.

In the United States, nurse anesthetists are the oldest of the advanced practice nursing roles. Alice Magaw (previously mentioned in the section “Task Shifting Is Not Task Sharing”) and Agatha Hodgins (1877–1945) were early pioneers in nurse anesthesia and catalysts for expansion of the role within the United States and Europe. Hodgins also was the founder and first president of the national organization of nurse anesthetists, which is now known as the American Association of Nurse Anesthesiology. CRNAs are educated to, and enjoy, a full-scope practice in the United States where they may work as members of an anesthesiology team or in a solo practice setting. The federal government and insurers recognize the advanced practice role of the CRNA and allow for direct billing and payment for CRNA anesthesia, pain management, and anesthesia-related services. The CRNA may work in any location anesthesia is administered. Most often, this is a hospital, ambulatory surgery center, endoscopy center, pain management clinic, and physician office. Scope of practice is at the highest level of nursing diagnosis and includes all types of anesthetic administration including neuraxial and regional blockade. CRNAs are trained and proficient in the use of ultrasound-guided blocks. CRNA Fellowship Programs include Advanced Pain Management, Acute Pain Management, and Pediatric Anesthesia.

Practice in the United States is regulated by certification requirements (NBCRNA), licensure by state boards of nursing, federal law, state law, and the facility in which the CRNA works. Practice regulations may vary from state to state and even by facilities within a state. CRNAs are the primary providers of anesthesia care in the US military and in 80% of rural America [25]. The CRNA is educated and prepared to practice to the highest levels of anesthesia care, offering high-quality, safe anesthesia care to the public.

Canada was reportedly evaluating the use of nurse anesthetists at the national level in 1994 with the documentation of a formalized program of education for nurses in anesthesia [26]. The education and practice of nurse anesthetists in Canada

were opposed by anesthesiologists, and this opposition has continued for decades. Currently, there are efforts to title the Nurse Anesthetist in Canada and to begin educational programs. A large backlog in surgeries ensued during COVID and continues. US CRNAs have served as consultants over the last 2 years in the efforts to formally recognize, license, and begin education of the nurse anesthetist in two of the Canadian provinces.

Puerto Rico is home to four nurse anesthesia programs, two of which are accredited by the COA in the United States. These programs have moved from a master's degree to a doctoral degree. Scope of practice is inclusive of general anesthesia, spinal anesthesia, and upper/lower extremity blocks. Currently, there are 135 RNAs and 35 CRNAs (USA certified) and 60 physician anesthesiologists administering anesthesia in Puerto Rico [27].

There is little documentation concerning NA practice in Central America. Nurse anesthetists were identified as receiving education and administering anesthesia within Mexico and the central American countries of Honduras, Nicaragua, and Panama in 1994 [26]. Mexico was once a member of the IFNA. An AANA Journal article in 2017 reported that an NA school opened in Belize in 2014 with the help of HVO and that 60% of the anesthetics in 2012 were provided by NAs [28].

Current data is sparse for the Caribbean apart from Jamaica. The history of the Jamaica NAs is found within the 2021 IFNA History book: *The Global Voice for Nurse Anesthesia: International Federation of Nurse Anesthetists (1989–2021)*. A nurse from Jamaica attended a US nurse anesthesia program in 1956. Upon completion, she returned to Jamaica to work and was the catalyst for development of the NA role in her country. Formalized NA education began in 1976 with the aid of the MOH. Further, a Jamaican collaboration with the Government of Cuba in 1980 resulted in the education of RNs as NAs who returned to Jamaica. The Jamaica School of Nurse Anesthesia began in 1981 through collaborative efforts of the MOH, University of West Indies, and the Advanced Nursing Education Unit [20]. This school was known to have educated many of the NAs who work in other Caribbean countries including Belize, Cayman, Costa Rica, Dominica, Grenada, Montserrat, St. Lucia, and St. Vincent [5]. The educational program in Jamaica is now at a master's degree level and has incorporated education in pain management and regional anesthesia [20]. While there is little known about the overall practice of NAs in the Caribbean today, NAs from Jamaica and the British Virgin Islands regularly attend annual meetings of the American Association of Nurse Anesthesiology.

A lack of key contacts in South American has inhibited data collection on NA numbers of scope of practice. Data collected in 1994 by Joyce Kelly demonstrated NA practice in Chile, Columbia, Guyana, and Peru. Additionally, Kelly reported that HVO had assisted with the development of a nurse anesthesia school in Guyana [26]. A 2016 online article in the Kaieteur News entitled "Bitter complaints of Nurse-Anaesthetists" speaks about an education program that began in 2008 and challenges with governmental contracts for employment in regions of Guyana validating NA practice of Guyana [29].

Table 6 <https://ifna.site/ifna-accreditation-program/>

Region of the Americas Educational Programs Accredited by the IFNA
University of Tennessee Health Science Center, College of Nursing, Nurse Anesthesia Concentration, Memphis, Tennessee, USA
Mount Marty College Graduate Program in Nurse Anesthesiology, Sioux Falls, South Dakota, USA
Western Carolina University Nurse Anesthesia Program, Asheville, North Carolina, USA
Puerto Rico School of Nurse Anesthetists, Puerto Rico
University of Alabama at Birmingham Nurse Anesthesia Program, Birmingham, Alabama, USA
Wake Forest School of Medicine Nurse Anesthesia Program, Winston-Salem, North Carolina, USA
Goldfarb School of Nursing at Barnes-Jewish College Nurse Anesthesia Program, St. Louis, Missouri, USA
Virginia Commonwealth University, Nurse Anesthesia Program, Richmond, Virginia, USA
Northeastern University Nurse Anesthesia Program, Boston, Massachusetts, USA
Louisiana State University Health Sciences Center (LSUHSC) School of Nursing Nurse Anesthesia, Louisiana, USA
University of Cincinnati, College of Nursing, Ohio, USA

Education/Scope of Practice/Challenges

NA education in the Americas ranges from certificate, bachelor, and master to doctoral level degrees. The scope of practice for an NA also has a large breadth, ranging from full scope to limitations that are most often neuraxial anesthesia (spinal/epidural) and peripheral nerve blockade. Reportedly, scope of practice is often influenced by the medical community (Table 6).

Regulation

All countries with the Americas have regulatory bodies who determine practice protocols and rules. These regulations are put into effect from the MoH, other governmental agencies, and state agencies such as the State Boards of Nursing in the United States.

NAs in Jamaica work in a supervised team model, and there is current movement for registration of NAs along with the other APRNs [20].

In the United States, nurse anesthesia educational programs must be accredited by the Council on Accreditation for Nurse Anesthesia Educational Programs (COA). Further, these programs are now required to confer a doctoral degree. To practice nurse anesthesia in the United States, one must successfully pass the national certification exam (first implemented in 1945). Passing the board certification exam bestows a title of “Certified Registered Nurse Anesthetist” allowing the use of the credential CRNA. Recertification requirements, first implemented in 1978, with multiple revisions over the years, are required for continued practice and use of the CRNA credential. The National Board for Certification and Recertification of Nurse Anesthetists (NBCRNA) sets requirements for both certification and recertification. Recertification currently requires a certain number and type of continuing education

content as well as retesting every 8 years. In addition to the 130 doctoral level entry to practice programs, the COA has accredited 5 fellowship programs for the CRNA with the first one accredited in 2014. Two fellowships are in advanced pain management, one in acute pain management and two in pediatrics. Pain management fellowships include education, skills, and competency in the use of the ultrasound and fluoroscopic guided injections. In 2015, the NBCRNA began offering a subspecialty board certification examination in Nonsurgical Pain Management. CRNAs who successfully pass this exam are credentialed as NSPM-C.

NAs in Puerto Rico must pass a local board exam to obtain their license to practice nurse anesthesia and earn the title of Registered Nurse Anesthetist (RNA). A master's degree is required for entry to practice, and programs may apply for US accreditation. Two programs in Puerto Rico are accredited by the US accreditation body, COA, to offer doctoral degrees [27].

Positive Outcomes/Challenges

This WHO region has the largest number of practicing NAs and highest level of education, which is the doctoral degree. Title protection, licensing and board examination/certification, continuous professional development, and recertification are required in most countries. Role recognition at the APN level exists within the region, and NAs are practicing in anesthesia teams or solo practice settings. Political challenges exist to role acceptance in Canada and other areas. Further, barriers to full scope of practice exist primarily from the medical community.

South-East Asia

The WHO region of the South-East Asia consists of 11 countries and is home to almost 2 billion people, which is equivalent to approximately 25% of the world's population [30]. The WFSA 2017 manpower survey reported that the goal for physician anesthesia providers is a minimum of 5:100,000 population for all countries. The 2017 WFSA manpower survey results report that physician anesthesia provider density ranges from 0.42 in Timor-Leste to 2.45 in Thailand with an overall density of 1.2:100,000 [18]. South-East Asia is in definite need of anesthesia providers. The practice of nurse anesthetists dates to 1956 in Thailand. Indonesia, Thailand, and Vietnam were all participants in the Kelly study of 1994 confirming the existence of global NA educational programs [26] (Tables 7 and 8).

Table 7 Countries with included region research

Countries included in region research
Indonesia
Laos
Thailand
Vietnam

Table 8 [18, 19]

Countries not included in region research but reporting NAs in WFSA manpower surveys
Bhutan
Nepal
Timor-Leste

Indonesia is a country made up of 34 provinces spanning 1700 islands with 6000 islands being inhabited. According to the World Bank, the 2020 population of Indonesia was 273.5 million. The number of inhabitants and the breadth of the country's domain are quite a challenge to healthcare needs, and there is a huge need for anesthesia providers in this country. NAs have been licensed to work since 2014 with professional standards having been developed within the MOH. Indonesian NAs are the largest number of anesthesia providers in the country, practicing in both solo and supervised settings. Their scope of practice range covers the realm of all perioperative care provided in and out of traditional operating rooms, acute/chronic pain management, resuscitation, and emergency services, and in intensive care wards [20].

Lao People's Democratic Republic (Laos)

NAs have been working in Laos for many years. HVO has been assisting Laos in an effort to reopen a formalized academic education at Vientiane, which last graduated a class in 2014. The nurse anesthesia program at Lao Friends Hospital for Children became an IFNA-accredited educational program in 2018. Scope of practice may vary depending upon the setting, but NAs in Laos administer general anesthesia and spinal, caudal, and epidural anesthesia and are using ultrasound imaging guidance for upper and lower extremity nerve blocks. Their practice includes much trauma anesthesia, and there are currently 26 NAs in Laos and 64 physicians providing anesthesia within the country [31].

Thailand

According to an Associate Professor in Anesthesiology at Mahidol University in Bangkok, NAs have been trained and practicing in Thailand for 66 years. Currently, Thailand has 18 training centers for NAs. The scope of practice for an NA is inclusive of general anesthesia and sedation. No regional anesthesia or peripheral nerve blocks are included in the SOP. Further, at current time, Thailand has 2000 anesthesiologists and 5000 nurse anesthetists practicing with the country [32].

Vietnam

The organization Health Volunteers Overseas (HVO) has had US CRNA volunteers working with nurse anesthetists in Vietnam for 20 years. Although the number of NAs in Vietnam is not recorded, a recent visit by an HVO CRNA volunteer confirmed the practice of nurse anesthetists in Vietnam and the volunteer met with the nurse anesthetist supervisor at Thai Nguyen National Hospital in Vietnam, located north of Hanoi [33].

Table 9 <https://ifna.site/ifna-accreditation-program/>

Countries with Educational Program Accredited by the IFNA
Lao Friends Hospital for Children Nurse Anesthesia Program, Lao Peoples Democratic Republic

Education/Scope of Practice

Within the South-East region, NA education varies from on-the-job to academic post-bachelorette graduate education. Scope of practice differs between countries, with some NAs providing the full range of anesthesia services and others being restricted from the administration of regional and peripheral nerve blockade to providing only general anesthesia and sedation (Table 9).

Regulation

NA practice in the South-East Asia region is regulated by a country's government, mostly through the MOH.

In Indonesia, the professional organization regulates the practice and education of NAs and collaborates closely with the ministry of health to continuously improve the standard of care in this field of nursing practice. They introduced licensure for NAs in 2014 [20].

There is a requirement for passing a board certification examination in Thailand [32].

Positive Outcomes and Challenges

The WHO region of South-East Asia has a huge anesthesia manpower shortage. Education and training of nurse anesthetists are well established in this region, and NAs are practicing to their full scope of practice in some countries, which serves to demonstrate the ability of NAs to increase access to anesthesia services and surgical care. Cambodia is an IFNA member country and, together with two IFNA-accredited nurse anesthesia educational programs (Laos, Philippines), is serving to increase the visibility of contributions of NAs to universal health. Challenges to education include the variance of education levels in programs and the content of education included in a program. Barrier to full scope of practice is a challenge in this region.

Eastern Mediterranean

The region consists of 21 member states and includes the occupied Palestinian territory (including East Jerusalem); the region has a population of nearly 745 million people [34]. A diversity of income is observable in the region; some countries are very wealthy, such as the UAE; on the other hand, others are facing very difficult economic situation such as Lebanon. Multiple tensions exist between the countries of this region, and even conflicts occur.

The WHO region office observed that this “*Region faces enormous health challenges. Health-related policies are often underdeveloped or inadequate; many*

health systems are under-resourced and poorly managed; and humanitarian emergencies are impacting the Region on an unprecedented scale.” Neonatal and child mortality are very high, a growing part of the population are living with noncommunicable diseases, and mental health problems are increasing within the population [34].

The Universal Health Coverage Service Coverage Index (SCI) shows that essential health services are less widely available in the Eastern Mediterranean Region than in most parts of the world due to the low public investment in health [34].

To improve the situation, the WHO regional office launched a strategic plan consisting of four objectives:

1. Expanding universal health coverage
2. Addressing health emergencies
3. Promoting healthier populations
4. Making transformative changes in the WHO

The WFSA 2017 manpower survey reported that the goal for physician anesthesia providers is a minimum of 5:100,000 population for all countries. Within this region, the WFSA physician manpower data ranges from 0 to 12.85, with an overall density of 3.31:100,000 [18] (Tables 10 and 11).

Practice

According to the IFNA history book, knowledge of the NA in this region dates to the 1950s in Tunisia and to the 1960s in Morocco [20]. NAs were the only anesthesia providers in these countries before the introduction of PAPs. In Tunisia, following a reform of higher education, NAs were replaced by higher technicians in anesthesia in 1976. Although a team approach is the model adopted in these two countries, shortages of PAPs, especially in rural areas, leave NAs alone to

Table 10 Countries with included chapter data

Countries included in region research
Egypt
Morocco
Iran
Saudi Arabia
Somaliland
Tunisia

Table 11 Countries with WFSA survey response [18, 19]

Countries not included but reporting NAs in WFSA manpower surveys
Libya
Pakistan
Somalia
Sudan

administer anesthesia and then to maintain access to the surgery. In the 1980s, some hospitals in Saudi Arabia decided to introduce foreign-educated NAs in their staff [35]. These expatriated NAs are working on a team approach model with PAs. Somalia also introduced NAs to better respond to the need of the population [36]. Technicians in anesthesia also provide anesthesia in the country. There are few expatriate PAs working in Somalia. The autonomy of NAs is high in this country. Egypt also reported of having NAs in their healthcare system, but no additional data was provided [34]. Iran reports the use of NAs for decades in academic settings and in hundreds of hospitals across the country [37]. Most recently, an Iranian who recently completed nurse anesthesia education contacted a US CRNA in the state of California to inquire about working in the United States [38]. Palestine has an IFNA-accredited nurse anesthesia program but did not report NA data on the WFSA surveys [18, 19], and it has not been possible to obtain the number of NAs' data from the program.

Education

In Morocco, nurse anesthesia educational programs are available. Use of simulation is an important part of NA educational training [20].

In Tunisia, initially the first NAs were educated in Algeria in the beginning of the 1950s when Algeria was ruled by France. The first Tunisian nurse anesthesia program was launched in 1958 following the independence of the country. The program was replaced in 1976 by a 3-year program preparing higher technician in anesthesia. This program was upgraded in 2010 and became a bachelor's degree in anesthesia and critical care [39]. There is nursing curriculum within the anesthesia programs, but the graduates do not obtain a nursing degree or diploma.

In Saudi Arabia, there is no nurse anesthesia program available. NAs working in this country are foreign educated, most are coming from Ghana, the United States, and European countries [35].

NA education was reformed in Somalia in 2010; registered nurses now received a 2-year additional education in anesthesia. Most NAs are trained in Kenya and have a full scope of practice [22].

In Iran, nursing education includes anesthesia with the NA obtaining a diploma from a university-based program. NAs are called anesthesiology nurses; there is no professional association, but there is a student nurse anesthesiology association, which is recognized by the government, so all NAs are members of the student association. The educational curriculum is modeled after the curriculum in Iceland is at the bachelor's or master's degree level. In 2019, the workforce was reported to be 34,000 with NAs working in hundreds of hospitals and 64 educational centers [37].

Palestine has a master's-level nurse anesthesia educational program accredited by the IFNA. The curriculum includes a course in regional anesthesia and pain management [40] (Table 12).

Regulation

Regulation within this region is mostly by the government's MOH.

Table 12 <https://ifna.site/ifna-accreditation-program/>

Countries with educational program accredited by the IFNA
AN-Najah National University, Palestine

In Iran, nursing education includes anesthesia and is done via curriculum, modeled after education in Iceland and approved by the MOH [37].

In Morocco, NA practice, while essential to the healthcare system of the country, is not officially recognized and the title is not protected.

Professional organizations have been established within this region's countries to promote the specialty and to defend interests of the population and anesthesia providers. They are very active providing services to their members and some have published journals. Protecting the title and obtaining formal recognition remain central issues.

Positive Outcomes and Challenges

The strategic plan implemented by the WHO regional office is ambitious. The expansion of the universal health coverage (Objective 1) would benefit for the contribution of NAs considering the shortage of PAPs observed in many countries of the region, especially in rural areas. Challenges include areas where education is not to the full scope of NA practice. Further, there are anesthesia equipment shortages in many countries [34].

European Region

The WHO European region consists of 53 countries spread over 17 time zones. The region is large geographically and is home to approximately 900 million people who speak 200 different languages [41]. Country size and population vary as does climate. History of countries forming the region is strongly linked to the growth of the European Union along with the end of the Soviet Union and its satellite countries. The end of the Yugoslavian republic also profoundly affected the region. Several countries have overseas territories. This historical background combination creates contemporary challenges, continuing to fuel many tensions and wars. The diversity in country population and wealth strongly impacts the health of the population and healthcare in the region. Important disparities exist in health resources available with many countries of the region providing universal health coverage.

The WHO regional office for Europe developed and implemented the “*Programme of Work 2020–2025 United Action for Better Health*” [41]. Three main outcomes have been selected in this strategic plan:

- One billion more people benefiting from universal health coverage
- One billion more people better protected from health emergencies
- One billion more people enjoying better health and well-being

The implementation of this plan will be supported by the adoption of another strategic plan focused solely on the specific contribution of nursing and midwifery [40].

The WFSA 2017 manpower survey reported that the goal for physician anesthesia providers is a minimum of 5:100,000 population for all countries. WFSA manpower physician data reported for Europe is an average of 18.60:100,000 with the lowest at 6.04:100,000 [18].

NAs work within many European countries. Regulatory bodies include, as applicable, the MOH, parliament, and associations (Tables 13 and 14).

Practice

According to the IFNA history book, historical knowledge of the NA in this region dates to the end of the nineteenth century when nurses, and sometimes nuns, administered anesthesia to patients under the supervision of surgeons [8]. Nurses' contribution to anesthesia practice was highly valuable during the two world wars. US nurse anesthetists trained many nurses during World War I and II. In the UK and in Ireland, physicians became interested in the practice of anesthesia and were able to monopolize its practice with a model exclusively based on PAP. At the end of WWII, nurses administered anesthesia to patients in many countries of Europe. In the 1950s, some countries (UK, Ireland, Portugal), under the influence of physicians, dictated that anesthesia practice was a medical domain. Therefore, the autonomy of NAs decreased, or was possibly replaced by assistants or technicians [8]. Most countries preferred to adopt another model such as the team approach, involving PAPs and NAs [8]. In other countries, nonphysician anesthesia providers (NPAPs) were introduced, which included both the NA and anesthesia assistant/technician.

Table 13 Countries with included chapter data

Countries with included data	
Austria	Luxembourg
Belgium	Monaco
Bosnia and Herzegovina	The Netherlands
Croatia	Norway
Denmark	Poland
France	Portugal
Finland	UK
Germany	Serbia
Greece	Spain
Iceland	Slovenia
Hungary	Switzerland
Ireland	Sweden
Italy	

Table 14 Countries with WFSA survey response [18, 19]

Countries not included in this region research reporting NAs in WFSA manpower surveys
Albania

However, there were countries which increased autonomy to NAs. Independent or solo practice is possible but may be based on the health status of the patient or the risks associated with the surgical intervention.

Education

Throughout history, surgeons were very involved in the training of the first NA in the region. During WWI, American CRNAs, such as Agatha Hodgins, trained many nurses in Europe.

In the countries which maintained NAs in their healthcare system, the first formal NA courses were introduced in the 1950s. The education and training were diverse, from a few hours of theoretical content with supervised practice organized in hospitals to formal programs accredited at the national level. Gradually, the length of nurse anesthesia program increased in many countries. More recently, some European countries transferred nurse anesthesia programs to universities. Further, there are countries who mandate a master's degree for the NA role. There are 14 nurse anesthesia educational programs in Europe accredited by the IFNA (Table 15).

Regulation

The regulation of practice of NAs in Europe is very diverse. There are countries which have not recognized the role of NAs even though NA practice is well established and brings high value to the healthcare system. Continuous professional development is mandatory for NAs in many countries, and there are countries with

Table 15 <https://ifna.site/ifna-accreditation-program/>

Educational Program Accredited by the IFNA
Master's Degree in Nursing Applied to Anaesthetics, Recovery, and Pain Management (MIA-ARID), Spain
Anesthetic Nurse Specialist, Lahti University of Applied Sciences, Finland
Saxon University of Applied Science, Bachelor of Nurse Anesthesia-Enschede, The Netherlands
Amstel Academie, The Netherlands
Lund University, Faculty of Medicine, Department of Health Sciences, Sweden
Fontys University of Applied Science Human and Health, The Netherlands
Saxion University of Applied Science, The Netherlands
Ecoles spécialisées Infirmiers Anesthésistes Diplômés d'Etat Infirmiers de Bloc Opératoire Diplômés d'Etat, Paris
Postgraduate Diploma Course in Nurse Anesthesia, Department of Anesthesiology, University Hospital Basel, Switzerland
Specialized Nursing Postgraduate Diploma, Faculty of Nursing, University of Iceland, Department of Anesthesia, Reykjavik, Iceland
Aargauische Fachschule für Anaesthetie-Intensiv-und Notfallpflege (AFASIN) Tellstrasse, Aarau, Switzerland
University Hospital, Rigshospitalet, Copenhagen, Denmark
Western Norway University of Applied Sciences, Program of Master's in Clinical Nursing—Nurse Anesthesia Specialization, Bergen University College, Bergen, Norway
Postgraduate Programme in Specialist Nursing-Anaesthesia Care, University of Gothenburg, Sweden

requirements for recertification. Predominantly, countries with established NA professional organizations have a stronger voice at the decision-making table.

Positive Outcomes and Challenges

Shortages of PAPs, and in some countries of NAs as well, are occurring more frequently in the European region. A lack of PAPs frequently results in changes in the scope of practice of NAs. Health workforce planning will be the main challenge in the region in future years. Recognition of the NA practice as an advanced nursing practice can also be an issue for countries in this region.

Western Pacific

The region consists of 37 member states and areas with a population of nearly 1.9 billion people of the Western Pacific Region [42].

This region is large and includes countries with large land masses, extended insular states, and also very small countries. Moving north to south, this region includes all types of climates. Due to the geographical location, countries in this region are exposed to earthquakes, volcanic eruption, and typhoons. The density of population, and health status, is very different throughout the region while economic status also varies. The incidence and prevalence of communicable and non-communicable diseases are high, and health resources can be a challenge. Areas of low population density combined with geographical characteristics of some countries (small islands, remote areas) within the region can make access to healthcare very difficult. The WHO Western Pacific Office adopted a strategic plan in 2020 to strengthen nursing and midwifery contributions in the region [42].

The WFSA 2017 manpower survey reported that the goal for physician anesthesia providers is a minimum of 5:100,000 population for all countries. WFSA manpower physician data for this region is 5.52:100,000 overall, with the lowest density in Papua New Guinea at 0.59:100,000 [18] (Tables 16 and 17).

Practice

Historical knowledge of the NA in this region dates to the 1950s [8].

In Australia, nurses were prevented by PAPs to administer anesthesia. To assist PAP in the administration of anesthesia, a nonmedical assistant role was introduced

Table 16 Countries with included chapter data

Cambodia
Australia
Japan
Lao
People's Republic of China
South Korea
Taiwan
The Philippines

Table 17 Countries with WFSA survey response [18, 19]

Countries not included in this region research reporting NAs in WFSA manpower surveys
Fiji
Malaysia
Marshall Island
Micronesia
Palau
Papua New Guinea
Tonga
Vanuatu

at the end of the nineteenth century. Some nurses work in the role of a technician, working closely with the PAP during the administration of anesthesia [20].

The Korean War left the healthcare system of South Korea very weak. The number of PAPs practicing in the country was very low. In 1964, an American CRNA, Sister Margaret Kollmer, was sent to the South Korean Maryknoll Hospital to introduce the concept of NAs and develop educational training. Sister Kollmer worked with the Korean Government to develop and implement an 18-month national education program. She also helped found the Korean Association of Nurse Anesthetists. The NA role brought increased access to care within the healthcare system and was formally recognized in 1973. In 2003, NAs were acknowledged as advanced practice nurses. Unfortunately, political challenges arose and the role became less attractive. To respond to the needs of hospitals, the Korean Government created an alternative nursing role in anesthesia with less autonomy. This role is not considered as advanced practice nursing. Currently, there is one educational program at the master’s level. Nurse anesthetists are mostly working in medium or small rural hospitals administering anesthesia with a lot of autonomy. On the other hand, nurses specialized in anesthesia are working in urban hospitals administrating anesthesia under the supervision of the MDA [20].

At the time of Joyce Kelly’s research in the early 1990s, there was no educational programs for nurse anesthetists in the Philippines; however, US CRNAs practiced in the Philippines with a full scope of practice [26]. Currently, there are 2 NA programs in the country with the ACES’ Nurse Anesthesia Program, Lucena City, having been awarded IFNA accreditation in 2013. The program’s website lists that NA education is inclusive of general anesthesia and regional anesthesia including anesthesia specific to surgical areas of obstetrics, ophthalmology, urology, general surgery, and orthopedics [43].

In Taiwan, the NA role was introduced in 1958 with the first graduates of nurse anesthesia training entering practice in 1959. In the healthcare system of Taiwan, NAs are essential to maintain the access to care; a shortage of MDA is observable in the country. Taiwanese NAs can administer anesthesia under the supervision of any physician, not only a PAP [20].

In Japan, a need to introduce the NA role was identified in 1977 due to an acute shortage of PAPs, which has since continued. But the idea became a reality only in 2007 with the support of the All Japan Hospital Association in Medical Committee

of the Social Security Council of the Ministry of Health, Labor, and Welfare. Experts from AANA and IFNA were consulted to introduce the role in Japan, and there was movement into specific medical intervention training for nurses in 2019, including airway management and postoperative pain management [20].

In Cambodia, nurses specialized in anesthesia and emergency were introduced in 1991. They provide anesthesia under the supervision of a PAP or a surgeon. NA practice in Cambodia began in 1991 with training funded through a loan from the World Bank. NAs are required to work in practice supervised by surgeons or anesthesiologists. Practice scope includes general anesthesia, regional anesthesia, preoperative evaluation, resuscitation in the intensive care units, and management of patients after surgery in postanesthesia care units [20].

In 1994, Joyce Kelly's research documented that NAs were providing full scope of anesthesia practice in some areas of China [26]. A couple of years ago, the People's Republic of China engaged a profound reform of nursing. Before this reform, the role of anesthesia nurses was poorly defined and many only assisted the PAP. The reform aimed to reintroduce nurse anesthetists, to give them more autonomy, and to recognize them as advanced practice nurses [44].

Education

In 1969, Sister Margaret Kollmer, an American CRNA, developed a course in South Korea to prepare Korean NAs; this program was inspired by American standards and was 18-month long. In 2003, the master's degree was mandatory to access to the role in South Korea [20]. Unfortunately, only a small number of CRNAs are graduated each year from this program.

Cambodia started a nurse specialist program in 1991 in collaboration with two French universities. Due to an urgent need in obstetrical care, the MOH supported a 2014 program specializing in anesthesia obstetrics and gynecology practice to improve access to care in rural areas of Cambodia. Over 3 years, 141 NAs were educated in this program and then deployed to rural areas of the country [20].

In Taiwan, the first nurse anesthesia program (1 year) was launched in 1958; at the completion of the program, students received a certificate. Since this time, the programs have been gradually upgraded to follow the development of anesthesia technics. National standards for nurse anesthesia educational programs were developed in 2019. A national written exam began in late 2020 with the addition of an oral exam in 2021, demonstrating NA knowledge and competency in anesthesia practice [20].

In Japan, the first NA education programs began in 2008. Between 2010 and 2018, four universities offered a master's degree nursing program specializing in anesthesia management. Specific medical intervention training for nurses began in 2019, including airway management and postoperative pain management [20].

In Australia, nurses can be trained as anesthesia technicians. The Australian College of Perianaesthesia Nurses (ACPAN) works closely with MDA professional organization to maintain standards of practice. There is a pathway through ACPAN for a nurse to be credentialed as an anesthesia nurse, but the scope of practice is not equal to that of an NA [20].

Currently, there are two NA programs in the Philippines with the ACES' Nurse Anesthesia Program, Lucena City, having been awarded IFNA accreditation in 2013. Information obtained from the program website lists NA education in general and regional anesthesia within the surgical areas of obstetrics, ophthalmology, urology, general surgery, and orthopedics. Passing a certification examination is required for practice [43].

Before the nursing reform engaged in the People's Republic of China, anesthesia nurses were poorly trained, and the educational programs were not harmonized [44]. A partnership was established with the Department of Nurse Anesthesia at Virginia Commonwealth University to develop a Chinese nurse anesthetist curriculum. China has multiple programs with IFNA APAP approval (Table 18).

Regulation

South Korea has had national education/accreditation since 1974 with full scope of practice [26]. The Ministry of Health and Welfare requires a master's degree and candidates to pass a national certification examination to enter practice [20].

In the Philippines, NAs must pass a certification examination for entry to practice [43].

Taiwan NAs must pass a written and oral certification examination based on standards developed by the Taiwan Association of Nurse Anesthetists at the request of the Ministry of Health and Welfare. The written exam was first offered in 2020 and the oral exam in 2021 [20].

Positive Outcomes and Challenges

In this region, NAs' contributions in the healthcare system and the anesthesia team bring added value. The introduction of NAs in a system that previously only used PAs seems to help solve manpower problems while promoting improved access to care of the population. Unfortunately, this contribution may or may not be adequately recognized by the state. The role of NA's professional organization was essential in many countries to introduce, implement, and develop the role. International collaboration with other NA organizations such as AANA or IFNA also brought positive outcomes in many countries.

Table 18 <https://ifna.site/ifna-accreditation-program/>

Western Pacific Educational Programs Accredited by the IFNA
Anesthesia Nurses Education Program of Lanzhou University Second Hospital, China
The Second Affiliated Hospital of Nanchang University, China
Education Program, Shanghai Ninth People's Hospital Affiliated to School of Medicine, Shanghai Jiao Tong University, China
BenQ Hospital Anesthesia Nursing Education Certificate of Completion, Department of Anesthesia, the Affiliated BenQ Hospital of Nanjing Medical University, the Fourth School of Clinical Medicine, China
Postgraduate Education Program in Anesthesia Nursing, Xuzhou Medical University, China
Alpha Centauri Educational System (ACES) Nurse Anesthesia Program, The Philippines

Chapter Summary

It has long been the view of the UN and the WHO that enhancing population health must include increased access to surgery and universal healthcare. To accomplish this, countries must build a team of qualified providers both in sheer numbers and in geographic locations to ensure access to timely services or the health of global citizens will continue to be compromised. Reported manpower shortage data is credible and barriers to access to advanced practice nursing care must be eliminated. Nurses are a part of the solution to help meet the growing needs of the patients and must be educated to the highest extent of the profession and allowed to practice to the highest level of their education, training, skills, and competencies.

Documentation of NA history and contributions to universal health is missing in many areas of the world. NAs are underrepresented in previous manpower studies. Why? Possibly due to a lack of a known contact or official data because there is no national professional organization to advocate for appropriate titling, licensing, or national certification. Nurses are often overlooked in terms of research priorities and data collection evaluating care outcomes.

Pivotal research for nurse anesthesia care began with Alice Magaw's first publication in 1899 [9], setting the stage for validation of practice. Joyce Kelly's 1994 published research documented educational programs around the world proving that NAs were being educated and working within all WHO regions [26]. Maura McAuliffe partnered with the WHO in 1992 to research the countries where nurse anesthetists were practicing in. Given that McAuliffe's 1996 research documented that nurses were administering anesthesia in 107 countries [5], we are confident that NA manpower numbers are often undocumented and thus underrepresented in the WFSA global workforce survey results published in 2017. Currently, two IFNA leaders serve on the WFSA Global Anesthesia Workforce Survey Committee and have been working alongside their physician colleagues over the last 2 years to gather data on global anesthesia providers. This data is currently under review with hopes for publication goal in 2023. Although data could not be obtained in each location where we have evidence that NAs are working, our hope is that the APN role of the NA will be better represented, recognized, and respected.

Optimal access to healthcare for the public remains a challenge in much of the world. Nursing is the largest healthcare discipline. Governments need to support nurses and ensure that nurses are a part of the decision-making healthcare team. Variation in levels of anesthesia education is problematic in preparation of the NA for full practice responsibilities. Funding for nursing education must be increased while barriers to practice eliminated. Education and full scope of practice must be political priorities in each country. Advanced practice nurses are key to increasing access to high-quality healthcare. APNs have been identified as providers with the knowledge, skills, and competency to share patient care/medical tasks with physicians and who are key in meeting current and future demands of public healthcare needs [12]. Moreover, evidence has come to light that in 137 LMIC countries, patients receiving poor-quality medical care resulted in a death rate higher than those who did not receive any care [14]. This statistic is unacceptable. The history

of NA service and contributions to health have been documented for over a century and a half. International advocacy efforts are critical to educate government officials, regulatory bodies, insurers, healthcare providers, and the public about the value NAs provide in building sustainable health systems within their countries. Despite claims from some of the medical community that NA practice is unsafe, multiple research studies demonstrate that NAs provide a high-quality, cost-effective alternative to physicians in educational preparation and practice while working well within a team or in solo practice [13]. Simply stated, NAs and other APNs are competent to provide a wide breadth of patient care services and are key to increasing access to safe, effective, and timely patient care—if only given the respect and the opportunity.

Appendix 1: Nurse Anesthetists' Scope of Practice, ICN Advanced Practice Nursing Guidelines: Nurse Anesthetist (2021) *reprinted with permission* [8] (pgs. 443–444)

Nurse anesthetists are advanced practice nurses who plan and deliver anesthesia and anesthesia-related services to patients of all ages and conditions. Nurse anesthetists collaborate with the patient and a variety of healthcare professionals in order to provide patient-centered high-quality, holistic, evidence-based cost-effective care. Nurse anesthetists accept responsibility and accountability for practice and engage in continuous professional development.

Preoperative/Before the Procedure

- Ensure a safe working environment.
- Provide patient education and counselling.
- Perform a comprehensive history and physical examination, assessment, and evaluation.
- Conduct a pre-anesthesia assessment and evaluation.
- Develop a comprehensive patient-specific plan for anesthesia, analgesia, multimodal pain management, and recovery.
- Obtain informed consent for anesthesia and pain management.
- Select, order, prescribe, and administer medications, including controlled substances.
- Identify potential complications, and plan and execute individualized interventions to prevent their occurrence.
- Maintain comprehensive and accurate healthcare records.

Intraoperative/During the Procedure

- Implement a patient-specific plan of care, which may involve anesthetic techniques, such as general, regional, and local anesthesia, sedation, and multimodal pain management.

- Select, order, prescribe, and administer medications, including controlled substances, adjuvant drugs, accessory drugs, fluids, and blood products.
- Select, insert, manage, and analyze invasive and noninvasive monitoring modalities.
- Recognize and appropriately manage complications that occur during the provision of anesthesia services.
- Maintain comprehensive and accurate healthcare records.

Postoperative/After the Procedure

- Facilitate emergence and recovery from anesthesia.
- Assess, analyze, and evaluate the adequacy of the patient's condition before transferring care.
- Provide a comprehensive report regarding the perioperative period to personnel in charge of the next level of care.
- Select, order, prescribe, and administer postanesthetic medications, including controlled substances.
- Conduct postanesthesia evaluation.
- Educate the patient related to recovery, regional analgesia, and continued multimodal pain management.
- Discharge from the postanesthesia care area or facility.

Pain Management

- Provide comprehensive patient-centered pain management to optimize recovery.
- Provide acute pain services, including multimodal pain management and opioid-sparing techniques.
- Provide anesthesia and analgesia using regional techniques for obstetric and other acute pain management.
- Provide advanced pain management, including acute, chronic, and interventional pain management.

Other Services

- Serve as leaders, clinicians, researchers, educators, mentors, advocates, and administrators.
- Respect human rights, values, customs, and beliefs of patients and their families.
- Prescribe medications, including controlled substances.
- Provide emergency, critical care, and resuscitation services.
- Perform advanced airway management.
- Serve as a resource for airway and ventilatory management.
- Perform point-of-care testing.
- Order, evaluate, and interpret diagnostic laboratory and radiological studies.
- Use ultrasound, fluoroscopy, and other technologies for diagnosis and care delivery.

- Provide sedation and pain management for palliative care.
- Order consults, treatments, or services related to the patient's care.

Appendix 2: Examples of Nurse Anesthetists' Contributions to Healthcare Services ICN Advanced Practice Nursing Guidelines: Nurse Anesthetist (2021) *reprinted with permission* [8] (p. 450)

- Nurse anesthetists increase access to surgery, obstetrical care, diagnostic procedures, and pain management in all types of healthcare settings that are located in urban, underserved, rural, and remote areas (Vreede et al. 2019; Blair 2019).
- Healthcare facilities in medically underserved areas are able to offer obstetrical, surgical, pain management, and trauma stabilization services that would otherwise be impossible without nurse anesthesia services (Lipnick et al. 2017).
- Nurse anesthetists provide anesthesia care to military personnel on front lines, navy ships, and aircraft evacuation teams around the globe (AANA 2020a; Gunn 2015; Lockertstein & Fause 2018).
- Nurse anesthetists help reduce needless death and disability in low- and middle-income countries where nine out of ten people have no access to basic surgery (Barash & Newton 2018; Umutesi et al. 2019; Vreede et al. 2019).
- Anesthesia that is required to meet an urgent need for surgical care in the world's poorest regions can be provided by nurse anesthetists in an affordable and timely manner that ensures good outcomes, as reported in Rwanda and Sierra Leone (Needleman and Minnick 2009; [20]).
- Appropriately educated nurse anesthetists can serve as resources and consultants to colleagues, teachers, and communities based on their nursing background and expanded competencies, as has been reported in Kenya ([20]; Umutesi et al. 2019).
- The training of nurses to provide anesthesia care has tremendously improved the health status of women and decreased maternal and infant mortality in some low-income regions, as reported in Sierra Leone (Sobhy et al. 2016; [20]).
- A nurse anesthetist school in Kenya has produced sufficient graduates to meet local needs and has now expanded the training program to nurses from other African countries. This serves as a role model for other countries to increase the anesthesia manpower necessary for patients needing surgery (Umutesi et al. 2019).
- Nurse anesthetists contribute to the safety of patients under their care. Anesthesia care given by nurse anesthetists or physician anesthesiologists is nearly 50 times safer in high-income countries than it was in the early 1980s (IOM 2000; Pine et al. 2006; Umutesi et al. 2019).
- Nurse anesthetists have contributed to the development of emergency preparedness programs and provided care during mass casualties based on their anesthesia education and expertise (AANA 2020d).

- Because of their knowledge in rapid assessment, airway management, management of vital cardiac and respiratory functions, and a nursing background in critical care units, some nurse anesthetists have assumed critical care responsibilities as licensed nurses during the COVID-19 pandemic (AANA 2020e).

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Nurse Anesthetists: Sharing Our Caring

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Abbreviations

CRNA	Certified registered nurse anesthetist
IFNA	International Federation of Nurse Anesthetists
NA	Nurse anesthetist
NPA	Nurse practitioner Anesthesia
PA	Physician anesthetist

Introduction

All over the world, Nurse Practitioners in Anesthesia, nurse anesthetists, have developed their roles suitable for the local situation and needs. Although there are many overlapping activities and situations, it is the specifics that make the role of the NA/NP Anesthesia in each and every country special. The differences in health care between low-, middle-, and high-income countries can be immense, but the care provided by all nurse anesthetists is remarkable, whatever their situation.

This chapter tells the stories of some extraordinary nurse practitioners working in anesthesia. Some work as independent practitioners, whereas others work within an anesthesia team. You will read about their situations, training, and work environment, but most of all, you will read about their passion for good and safe anesthesia patient care. After reading this chapter, hopefully you will feel inspired and maybe take a decision that will change your life like it did for many of our storytellers.

Vera Meeusen, PhD in Medicine, CHM, MA, FACPAN, RN

Finland

I felt a gentle breeze on my skin through the open window. It was a warm summer night, about 3 AM and the sun has just risen. I sat on a bench and suddenly felt my physician colleague leaning on my shoulder and I did the same. We had just delivered a patient to the intensive care unit and rested for a while before heading back to the operating theater. I heard him say: “Hey you, I think we managed to save one father’s life for his underaged children.” This is one of my golden memories from the very beginning of my career as an NA and tells me all about the teamwork between the NA and anesthesiologist. Respect, trust, and unity.

I use the following lines to share a few of my thoughts about being an NA. This is a story of my life. I became a nurse in the 1990s and was one of the last anesthesia-perioperative specialized nurses in Finland before a big reformation of education changed the whole system. Since then, the Finnish educational system has only produced and still produces general registered nurses and, at the moment, it is not even possible to educate oneself in any specialty. Happily though, in the last few years, there has been a lot of discussion about the need for education in different specialties and maybe change is on its way.

I thought I would never be an NA because anesthesiology, anesthesia care, and the huge responsibility over someone else’s life somehow scared me. Despite that, I found myself behind the surgical curtain and I’ve never regretted it.

I’ve been working in one of Europe’s largest trauma centers (Töölö Hospital, Helsinki) and, after a few years of working in a demanding unit, my skills heightened enough for me to discover the beauty in anesthesia care. Trusting my skills and myself, it gave me the opportunity to no longer fear but enjoy my anesthesia responsibilities.

In Finland, the NAs are not working independently. Formally, anesthesiologists are responsible for the whole anesthesia care. However, nurses are often maintaining the anesthesia alone, only consulting the physician if needed. But the longer one has worked in anesthesia, the greater the autonomy tended to get, and we are willing to accept. Maintaining anesthesia and making decisions and intervening when the situation requires it is now all part of daily practice. It’s all about trust between the physician and the NA.

Working over two decades in the trauma center with all its professional challenges and demands has given me a meaning for the “one for all, all for one” phrase. The atmosphere, collegiality, and friendship were an enormous power to rely on in any situation—whether it involved a professional or a private matter. Professionally, I became involved in the Finnish Association of Nurse Anesthetists (FANA) and joined the FANA Board in 2014. After 1 year being a general Board member, I continued as editor, editor-in-chief, vice-chair, chair, and now, additionally, international contact person.

Respect has always been a value for me. Respect for other people and other professions—in operating the theater, you can’t manage by yourself, and I’ve had a huge opportunity in my life to respect and to be respected. I have actively promoted the profession of the NA. I still do. And I’ll never stop. I’ll speak up for education

specialized just for anesthesia care—loud and clear, in every possible situation. And I'll try to convince younger colleagues to take this path. Because, as I now begin my final 5 years of my career, I can honestly say—this has been a wonderful, fulfilling, and very satisfying journey. To be an NA makes me proud, humble, and thankful and it's been a privilege.

Sari Pyhälä, RN Anesthesia-perioperative care

- A. tired night nurse
- B. Leaving trauma center after 23 years
- C. From OR (smaller trauma)
- D. My “office,” acetabulum fracture, might need some shadowing (patient's face)







United States of America

I was born August 12, 1964 in Dallas, Texas, USA. After graduating high school in 1982, I found work in a local steel mill, but on my time off, I broke horses for professional trainers in the area and rode bulls on the amateur rodeo circuits. Bull-riding injuries resulted in several surgeries and forced me to find a new source of income for my family. After much thought and prayer, we moved to Fort Worth, Texas to begin my nursing education at Texas Christian University in 1990 and I graduated in 1993 with a bachelor of Science in Nursing. I sought further education with Texas Wesleyan University's Nurse Anesthesia program and began my studies there in 1996, graduating with a master of Health Science degree in December 1998 and obtaining my board certification in nurse anesthesia (CRNA) the same year.

I started my nursing career at College Station, Texas and was able to learn the many nuances of providing anesthesia to all types of patients from geriatric to pediatric patients. From cardiology to neuro or orthopedics, I sought to find the safest, most effective means of providing anesthesia and quickly learned that a regional nerve block would provide superior analgesia for patients and that became a passion for many years to come. My knowledge and expertise in peripheral nerve blockade grew rapidly. Together with co-worker Dan Nash, I formed an education company (Maverick Medical Education) to teach other CRNAs how to administer peripheral nerve blocks safely and effectively. Today, Maverick conducts over 30 teaching engagements a year, educating more than 1500 CRNAs annually in the art of peripheral nerve blocks for acute pain management. We developed a high-fidelity simulation of ultrasound training, in which a human cadaver specimen is made pulsatile, which was awarded a US patent in 2022 for its originality.

I continued to seek knowledge on the treatment of pain and completed a Fellowship in Advanced Nonsurgical Pain Management in 2018 and became one of the first 50 Advanced Practice Nurses in the United States to obtain board certification in non-surgical Pain management. I opened a private pain management practice (Republic Pain Specialists) in March of 2019. This was the first office-based pain

practice owned and operated by an Advanced Practice Nurse in the state of Texas. Today, we treat all types of cervical, thoracic, and lumbar spinal stenosis, arthropathies and degenerative changes with fluoroscopic guided interventions, but also peripheral nerve entrapments, degenerative joints, migraine headaches, and many other unusual pain pathologies with ultrasound-guided injections or neurolysis techniques.

One of those unusual pathologies is the persistent autonomic dysfunction sometimes seen following a Sars Covid-19 viral infection, the so-called Long Covid Syndrome. A patient may experience debilitating fatigue, mental fogginess, difficulty concentrating, elevated resting heart rate, dyspnea, persistent cough, dizziness with standing, sleep disturbance, increased anxieties and depressions, lack of appetite and food aversion due to diminished and altered sense of taste and smell. The over-reacting positive feedback loop of the neuro-immune-inflammation cascade are thought to be involved in the malfunction of the autonomic nervous system and, predominantly, the sympathetic nervous system, resulting in Long Covid syndrome. An interruption of this feedback loop, by a Stellate Ganglion block (SGB), can allow a “reset” and the opportunity for the body to reorganize itself and potentially eliminate the symptoms.

Case Study: A 41-year-old, 60 kg, 162 cm female presented to the pain clinic for symptoms of parosmia > 5 years. She denied any medical, surgical history. She was previously prescribed amitriptyline, duloxetine, hydrocodone, and pregabalin by numerous physicians. She reported unusual symptoms of neurocognitive disorder (brain fog, loss of attention, confusion), autonomic dysfunction (tachycardia, palpitations), musculoskeletal (myalgias, arthralgias), psychological (anxiety, depression, insomnia) disorders, and Dysgeusia and parosmia since 2017. She has been evaluated by more than 30 different healthcare specialists who could find no cause or solution for her symptoms. She received five brain MRIs and several EEGs, CT scans, and hematologic lab panels that were all negative and had attempted multiple medications and therapies without a noticeable effect. She described extreme debilitating effects on her daily functioning, personal relationships, work life, and overall health status.

Due to the failure of her previous treatments and her widespread multi-system symptoms, it was postulated that she suffered from persistent dysautonomia triggered from some unknown stressor. A right sided stellate ganglion block was performed under ultrasound guidance using 7 ml of 2% Lidocaine and 4mg of Dexamethasone. She experienced a right-sided Horner’s syndrome almost immediately. Following the SGB, she was provided various foods and drinks and reported a near complete restoration of her smell and taste within 10 min. On a follow-up appointment 2 weeks later, she reported >90% resolution of all her symptoms. The significant and immediate improvement following her SGB suggests that her symptoms were due to an imbalance of her sympathetic and parasympathetic nervous system. This example of dysautonomia is the same as seen by many following a Covid-19 infection. As of September 2022, I have performed over 750 Stellate Ganglion blocks for Long COVID syndrome with a >85% success rate.

David Gaskin, MHS, CRNA, NSPM-C



Laos

The Lao People's Democratic Republic (LPDR) is one of the poorest countries in Southeast Asia, with a population of 7.4 million people [1]. Although the highest population density is along the Mekong River, 80% of the people live in rural areas. Health care is improving, but health metrics in Laos are the lowest in Southeast Asia, with a life expectancy at birth of 68 years [1]. The child (under 5 years) mortality rate is 44 per 1000 live births, and the maternal mortality rate is 185 per 100,000 live births compared to, e.g., United Kingdom, they are respectively 4.2/1000 and 7/100,000 [2]. Access to surgery and the number of surgeons and anesthesia providers is at a critically low level in Laos. There is a total of 248 anesthesia providers in Laos with a variety of educational backgrounds: nurses, medical assistants with some anesthesia training, and 60 physicians [3].

Lao Friends Hospital for Children (LFHC), affiliated with the US NGO Friends Without a Border (FWAB), is on the grounds of the Luang Prabang Provincial Hospital, on the outskirts of the city of Luang Prabang, Luang Prabang Province. I am the Health Volunteers Overseas (HVO) Program Coordinator for the Lao Friends Hospital for Children (LFHC) Nurse Anesthesia Program in Luang Prabang, Laos. I had been working with Kenro Izu and his foundation Friends without a Border since 2006 at Angkor Hospital for Children (AHC) in Siem Reap, Cambodia. In 2013, while at AHC, Kenro and I talked about how we would educate the nurse anesthetists at LFHC. LFHC opened in February of 2015 and provides all pediatric care on behalf of the Luang Prabang Provincial Hospital. All Lao, Hmong, and Khmu families who bring their children for health care at the provincial hospital are seen at LFHC for free.

With assistance from the United States, Australia, the United Kingdom, Cambodia, and Japan, the operating theater opened in July of 2016 at LFHC. All six anesthetists from AHC took turns going to LFHC and providing clinical instruction

for the LFHC nurse anesthetists until the end of December 2016. Additional clinical instruction was provided by the anesthesia departments at Mahosot Hospital in Vientiane, Laos and Siriraj Hospital in Bangkok. As the HVO coordinator for LFHC, I coordinate the volunteer nurse anesthetists and anesthesiologists to provide clinical, didactic, and simulation instruction at LFHC and have been going to LFHC for 6–8 weeks a year since 2015 and AHC up to 6 weeks a year since 2006. The HVO LFHC Nurse Anesthesia Program was recognized in 2018 by the International Federation of Nurse Anesthetists. Anesthesia care at LFHC is currently provided by three nurse anesthetists who already worked at LFHC, were selected based on their clinical skills and English language abilities. Two nurse anesthetists are Hmong and one is Laotian. The Laotian nurse anesthetist, Noy, was a monk for 5 years prior to attending a diploma program in nursing. Noy goes back to the family farm to help on the weekends. Kuelee, one of the two Hmong nurse anesthetists, is from Xiangkhoang Province near the Plain of Jars and Si, the second Hmong nurse anesthetist is from a small village 3 h outside of Luang Prabang and grew up with Hmong and Khmu and speaks Hmong, Khmu, Lao, and English. Si received a degree as a medical assistant and Kuelee received his diploma in nursing in Luang Prabang. The cultural expertise of the nurse anesthetists helps families and patients engage with the staff at LFHC. Hmong families often ask to come to the entrance of the operating theater to gather the spirit that was lost from patients when receiving anesthesia.

Surgical care at LFHC is often provided for the following conditions, orthopedic injuries, hernias, acute abdomen and wound care for burns or other injuries. More complex cases included omphalocele repair, gastroschisis silo placement, leech removal from the trachea, and chest tube placement. Anesthetics is often provided using ultrasound-guided regional blocks. General anesthesia is used particularly for abdominal cases. The Universal Anesthesia Machine (Gradian) uses an isoflurane draw over vaporizer with an oxygen concentrator. Medications readily available include propofol, ketamine, midazolam, fentanyl, morphine, succinyl choline, vecuronium, neostigmine, adrenaline, and atropine.

For those interested, anesthesia for leech removal from the trachea works best with some inhalation agent such as isoflurane and ketamine. The isoflurane anesthetizes not only the patient but also the leech. Light anesthesia can be useful to make the patient cough and allow the nurse anesthetist to grab the tip of the leech. Care needs to be taken to grab the end of the leech to keep it intact on removal and prevent bacteria going into the airway. Lidocaine jelly works well for leeches in the nose.

LFHC usually runs a schedule of 5–6 cases per day and surgeries are performed by the surgeons from the Luang Prabang Provincial Hospital. Surgeon availability varies, but preoperative preparations usually start at 08.00 h and by 09:30 h procedures are under way. In 2017, my wife, an obstetrician from Japan, joined me on my trip to LFHC. Since 2019, she has been working as a consultant in the maternal child section at WHO in Laos. She made contact with Dr. Traychit Chanthasiri, Chief Anesthesiologist Mahosot Hospital, Vientiane and President of the Lao Society of Anesthesiology.



In July of 2022, we held a conference with 27 anesthesia providers from Nambek Hospital, Luang Prabang Provincial Hospital, the Military Hospital (#105), LFHC, residents from Vientiane, university faculty from Vientiane and Pittsburgh (USA). Two weeks earlier, this was scheduled as workshop for residents to learn blocks. It blossomed over a two-week period.

Richard Henker, PhD, CRNA, FAANA, FAAN

Somaliland

Somaliland, officially the Republic of Somaliland, is a de facto state in the Horn of Africa, considered internationally to be part of Somalia and is not formally recognized. Because of its unusual position, support from the international community is limited. Formal training of nurse anesthetists is provided by Kenyan nurse anesthetists in Hargeisa (since 2013) and Boroma (since 2011). The NAs are mainly working in the cities, whereas in district hospitals, many “technicals” are working who had limited to no formal training [4]. The resources in the cities are adequate, but in the rural areas, the availability of equipment and drugs are causing issues. Currently, 31 NAs and no physician anesthetists are providing anesthesia care in a country with a population of approximately 4 million people [5].

Dealing with all the resource issues, one of the patients that made a huge impression on me was a 30-year-old healthy gravida 3 para 0, pregnant, who was admitted because of preeclampsia at 32.5 weeks. There was significant proteinuria and high blood pressure (160/90 mmHg) as mentioned in the guidelines for the treatment of preeclampsia. She experienced no preeclamptic symptoms. Her blood pressure was treated successfully with oral labetalol 100 mg twice daily.

Ultrasonography showed a placenta previa of fetus 1. Therefore, after counseling, elective cesarean delivery was planned at 36 weeks gestation. However, at 35.2 weeks she had vaginal blood loss with cloths, estimated at 100 ml and was ongoing which led to the decision to perform an unplanned cesarean section. Hemoglobin level was 7.8 mmol/L an hour prior to the cesarean section. On arrival at the operating room her vital functions were normal. Spinal anesthesia was achieved at the midline of the L3–L4 interspinous space. Sensory block level up to Th6 was achieved after administering 2.4 ml of hyperbaric bupivacaine 0.25%. The procedure was uneventful except for a slight decline in the blood pressure which was resolved after administration of Ephedrine 30 mg intravenously (IV) parallel with a 500 ml colloidal solution. After which, she was positioned in left lateral tilt. At this moment, the

patient became unconscious; her heart rate dropped, and she developed apnea within seconds. The electrocardiogram (ECG) showed bradycardia followed by asystole.

Immediately, we initiated advanced life support by performing chest compressions and start of manual ventilation after intubation. Atropine 0.5 mg IV was administered, followed by adrenaline 1mg IV. Within 3 min, three daughters were delivered in good condition. The surgeon realized the patient would die due to her condition. He removed his gloves and stepped out of the surgical field and his assistant continued the suturing. Still, the anesthesia team was struggling to save the mom, performing chest compressions and ventilation now for 2 min. Initially continuous adrenaline infusion with 20 µg per ml was started to maintain a mean arterial pressure of at least 70 mmHg. Approximately 15 min after the cardiac arrest, the adrenaline infusion could be stopped with no further need for catecholamine support. In the meantime, the surgical procedure was continued.

The patient was afterwards transferred to the Intensive Care Unit. A cooling protocol was started after initial cessation of sedation showed pathological stretching of all extremities. Extended diagnostic examinations showed no obvious abnormalities. Approximately 48 h after cardiac arrest, she returned to full consciousness with complete neurological recovery, followed by extubation. After 6 weeks, the patient had recovered completely and could attend to her three healthy daughters.



Mohamed Abdi Abdilaahi, Nurse Anesthetist, pharmacist

Iceland

The healthcare system of Iceland is based on universal health coverage, where healthcare cost is largely paid for by taxes and by patient contributions, assuring the almost 380,000 residents of the country access to health care. Iceland is divided into seven healthcare districts, each of which provides general hospital services [6]. Five of them provide surgical services with anesthesia provision, where all but one incorporates anesthesia services provided by nurse anesthetists. The Landspítali University Hospital is the country's main hospital with about 700 beds and is the largest workplace for healthcare providers, including 73 registered nurse anesthetists [7]. The hospital offers several specialist and tertiary services to residents and the abundant number of people visiting the country. After nearly a decade of steady increase of overnight visitors, the number reached 2 million in 2019, but took a sharp dive to less than half a million in 2020 during the COVID-19 outbreak and has increased by almost half annually since then [8]. Tourism is expected to continue recovering and reach 1.5 million in 2023, translating to increased demand for high quality anesthesia care and services from the currently around 1330 anesthetic interventions on a monthly basis [9, 10].

In Iceland, the anesthesia practice has evolved as both the specialty of medicine and nursing. The workforce of nurse anesthetists is limited to public hospitals, but in private clinical settings, the anesthesia care is solely rendered by physician anesthesiologists. In hospitals, the anesthesia practice model is based on indirect supervision of an anesthesiologist, requiring both attending anesthesiologist and nurse anesthetist to be present during the induction and emergence phase in general anesthesia. An exception to the predominant practice model of 1:1 in the country is in one rural hospital, where a nurse anesthetist is the sole anesthesia provider.

Nurse anesthetists provide direct anesthesia care to all types of surgeries, nonoperating room interventions, and related services. They are involved in anesthesia care throughout the perioperative period, taking an expanded role of patient preoperative anesthesia assessment by phone calls in a newly established perioperative patient center at the University hospital for preoperative patient preparation, optimization, and rehabilitation. Nurse anesthetists also play a role in an interdisciplinary team for inpatient acute pain services by following up on patients with indwelling epidural catheters. Patient safety and high-quality care is the core of the professional practice with the aim of continuously maintaining high quality of patient-centered care and improved safety, ensuring the practice is based on best evidence and advanced knowledge. At the University Hospital, nurse anesthetists have assembled teams around surgical subspecialties, and different objects on patients' safety are made weekly as the topic of the week. Council of nurse anesthetists works on improved patients' services and safety with professional evolution and simulation gaining increased role of intra- and interdisciplinary teamwork and the professional practice.

The University of Iceland offers the only nurse anesthesia educational program in the country in collaboration with the University Hospital on the clinical practice and earned accreditation by IFNA (International Federation of Nurse Anesthetists) in 2013. Due to both demographic and local factors, the program is small, with a capacity of accepting only 10–13 student nurse anesthetists on average every other

year. The number accepted to the program is limited by learning opportunities in the operating rooms during the clinical residency as student nurse anesthetists may need to compete with other students and residents for clinical experience and cases. Thus, being a small country brings a challenge for educating the majority of nurse anesthetists at the only University Hospital that has the capacity of only ten students biennially. Occasionally, two other hospitals accept up to three students for clinical residency, which requires the students to rotate to the University Hospital to meet educational standards for anesthesia requirements of all types of surgical cases.

Developing anesthesia care plans and simulation labs are both integral components of the educational process throughout the term of study, fostering students' cognition for sharp creation of individualized patient care and critical thinking skills underpinning their competency for professional career [11]. Upon graduation, student nurse anesthetists fulfill the educational standards by IFNA and thus the expert role from the conceptual framework for nurse anesthesia practice based on the CanMEDS role model [12]. One of the challenges of the practice faced by the Icelandic nurse anesthetists is broadening their scope of practice to their full potential. Currently, there is ongoing progress on changing the practice model at the University Hospital by admitting two nurse anesthetists to deploy general anesthesia in patients classified as ASA I and II. This proposal for change in practice has evoked strong opposition among a group of attending anesthesiologists, creating a barrier against the innovation. Despite numbers of intra- and environmental obstacles against the professional practice toward the full potential, a consensus must be made by the members of the Icelandic association of nurse anesthetist in advocating the scope of practice and other empowering issues.

There is prestige in providing patient-centered empathic and compassionate care based on the integration of art with science. Promoting the profession and patient care by advanced education and lifelong learning has become a natural pathway with incorporated progression and challenges. These are the motivations behind why we became Nurse Practitioners in Anesthesia and maintain our passion for the profession.

Thorunn Scheving Eliasdottir, PhD, CRNA & Lára Borg Ásmundsdóttir, MS, CRNA



France

I am a French nurse anesthetist, *infirmière anesthésiste diplômée d'Etat*, graduated in 2020. There are more than 10,000 CRNAs registered in France (out of 700,000 RNs). I graduated from nursing school in 2004 and got extensive clinical experience in emergency nursing before being admitted to the nurse anesthesia program. Before commencing the CRNA training program, it is mandatory to have at least 2 years of clinical experience as a nurse. Personally, I have always been attracted to a unit where adrenaline and self-control are required.

Regulated by the state, our nurse anesthesia education is at a master's level and takes 24 months (full time). Only accredited schools can implement the national program defined conjointly by the Ministry of Health and the Ministry of Higher Education. Currently, we have 28 programs, 26 located on the mainland and two located in overseas regions. The program consists of 50% theoretical content and 50% clinical placements and after completion, you receive a state certificate. CPD is mandatory for CRNAs on a three-year period and in 2023, recertification will be implemented.

The CRNA title is protected in France. The national CRNA competency framework includes seven competencies; most of them are clinical, but we also have competencies in knowledge transfer, quality improvement/ risk management and research. CRNAs can work in different domains: anesthesia, PACU, prehospital emergency teams, ICU, and pain management teams. The anesthesia team model (medically directed) means that CRNAs can provide anesthesia in collaboration with a physician anesthesiologist (MDA) who supervises the anesthesia of several patients at the same time. The anesthesia plan is decided by the MDA, who is present during the induction phase and performs spinal and regional anesthesia. The CRNA prepares the anesthesia environment based on a patient-centered approach, takes care of the patient during anesthesia, and implements the anesthesia plan with a high level of autonomy. CRNAs are not trained to perform epidural or nerve block, but will support the MDA during these procedures. When the catheter is in place, the CRNA takes care of the patient during the surgical procedure and is allowed to administer additional local anesthetic through the catheter, if required. The MDA is responsible for the prescription of the postoperative treatments plan and makes the decision about the transfer of the patient from the PACU to the hospital ward or their discharge after a day procedure.

As the large majority of CRNAs in France, I work in the public sector in a 769-bed hospital providing a large range of services to a multicultural population, adults, and children. Our anesthesia team consists of 22 CRNAs and 14 MDAs. My schedule is mainly day shifts, but I am on 24 h call once a week. Today, I'm on day shift working from 8 am to 6 pm. Everyone starts at 8 am in the OR, so there is a lot of hustle and bustle in the locker room. As I like to work in a quiet atmosphere when I start my day, I always arrive 20 min early. At 07:40 am, I am in the operating theater complex consulting the team allocation board, checking who the surgeon and other

team members will be. Today I will take care of gynecology patients, which I like because it was my first clinical experience as an RN. I collect all the equipment and drugs I need to implement the anesthesia plan, check the anesthesia equipment, and prepare the drugs that will be used for the first case. 08:10 am, I can now greet my colleagues over a small coffee while waiting for the arrival of my patient. Ten minutes later, our team meets the patient in the transfer room where we introduce ourselves, collect medical information and perform a quick assessment. After this, the MDA will finalize the anesthetic strategy. A general anesthesia will be performed for this patient. We only have a few minutes to establish a therapeutic relationship with the patient before we put them to sleep. It is very important that they feel confident and reassured, allowing us to optimize the consumption of anesthetic drugs and to relax (given the context) the patient. I am vigilant regarding the patient's comfort and care and adapt my communication to the patient's characteristics and needs. The MDA initiates the induction and after a final check leaves the maintenance of the anesthesia to me. I remain with the patient, monitoring and managing the anesthesia to ensure a smooth procedure. At the end of the surgery, I bring the patient to emergency, transfer the patient to the recovery room, and make the handover to our colleagues. We can now go back to the OR to prepare for the next case. 12:30 pm, lunch time, I'm lucky today because a colleague relieves me, which is not always possible as the OR schedule runs continuously. I talk and share with colleagues about life, holidays. We take the time to relax because our patients' life stories are sometimes difficult to deal with. These breaks are like a breath of oxygen to regain energy and return to take care of our patients. Taking care of yourself allows you to take care of others. 1:10 pm, another patient. Alice, a student nurse anesthetist (SRNA), will join us and I will be her clinical supervisor. It is her first day and she has spent her morning to orientate herself to the OR. I love clinical teaching because I share my experience, and transfer and keep my knowledge up-to-date. 3:25pm, together with the SRNA, I transfer my last patient in recovery room, and we check for any other duties allocated to us.

We are a close-knit team and when one of its members face difficulties, the others are there to offer help and support. I love my team for that and for our moments of laughter. I love my job because we are always on the move, and everything can happen. We must be ready for any eventuality because the situation can change very quickly. But sometimes, a little bit of calm is good too.

Besides my CRNA degree, I also obtained expertise in interprofessional high-fidelity simulation teaching, contributed to the implementation of sessions for health-care professionals and some hospital projects. In the French healthcare system, CRNAs have many opportunities to develop a career plan, including teaching as CRNA faculty and research through getting additional education at PhD (doctoral) level.

Semia Bouzid, MSN, CRNA, RN & Christophe Debout, PhD, CRNA, RN



Indonesia

In Indonesia, we have Diploma 4 Nurse Anesthetists that provide independent practice. There are 11 anesthesia nursing education program institutions in Indonesia that provide training for this role. However, there are still some Diploma 3 nurse anesthetists, but they are required to obtain their diploma 4 education within the next few years. Indonesian Association of Nurse Anesthetist (IPAI) is the only professional body that is recognized by the government and has currently 4579 nurse anesthetist members, 4134 physician anesthetists, and another 4579 non-physician anesthetist members.

Indonesia has 34 provinces, and the population is more distributed in the urban than in the rural areas. Each area has around 50–100 Nurse Anesthetists, but in the large cities, it is at most 400–700 nurse anesthetists. For example, at the Bangka Island, population 1,146,000, east of Sumatra where I live, Depati Hamzah General Hospital Bangka has two physician anesthetists and six nurse anesthetists.

The Minister of health regulates the licenses and practice of nurse anesthetists (Penata Anestesi) and is regulated in 519/Menkes/Per/III/2011, the guidelines for the implementation of Anesthesiology and Intensive Therapy Services in Hospitals. Indonesian Nurse Anesthetists are required to have an STRPA and SIPPA registration which are both provided by the government. STRPA/Nurse Anesthetist registration certificate is written evidence of competence in accordance with the provisions of the legislation. SIPPA/Nurse Anesthetist practice license is written evidence to authorize a nurse anesthetist to carry out professional practice as a nurse anesthetist in healthcare facilities.

The legal basis for the practice of nurse anesthetist is documented in article 65 of Law No. 36/2014 concerning Health Workers. This states that health workers, in carrying out health services, can receive delegation of medical actions from physicians. Health workers includes nurses, midwives, nurse anesthetists, physical therapy personnel, and medical technicians. This means nurse anesthetist can carry out services under the supervision of a mandated delegation of authority from an anesthesiologist or other physician. But also, based on government assignments as needed, e.g., in the event that there is no anesthesiologist in an area. Services in the context of delegation of authority can only be carried out by nurse anesthetist who have received training, and anesthesia services in accordance with additional competencies obtained through education. Nurse Anesthetists' professional practice includes pre-anesthesia, intraoperative, and post-anesthesia.

The Professional Organization IPAI has established the Nurse Anesthetist's Professional Standard which sets the requirements for certification. It discusses the minimum ability necessary in the form of knowledge, skills, and professional behavior that must be mastered and possessed by nurse anesthetists to be able to carry out their professional practice in the community independently.

In my hospital, we do approximately 250–400 of anesthetics per month. As a non-physician anesthesia provider, nurse anesthetist, we provide anesthesia for cesarian section, tonsillectomy, odontotomy, herniotomy, orthopedics, laparotomy with obstructive ileus, etc.



Syah Insyah, Registered Nurse Anesthetist

Morocco

In Morocco, the name of Nurse Anesthesia Association is The Moroccan Association of Nurse Anesthetists (L'association Marocaine des Infirmiers Anesthésistes, AMIAR). The number of anesthesia cases is more than 3 million cases per year, provided by close to 2000 nurse anesthetists and 220 physician anesthetists for a population of approximately 45,000,000. The requirements to be considered for admission to a nurse anesthesia educational program is a scientific baccalaureate with honors, pre-selection on notes, then a written and oral competition.

The education and experience required to become a nurse anesthetist is 3 years' training directly after the baccalaureate, existing theoretical and practical courses and internships in hospitals. Regarding continued professional certification/development/continuing education, no continuous training is compulsory. All continuous training is done in a friendly way if the person wishes to do so (congresses, practical workshops, simulation, etc.). Moroccan anesthetist nurses work in operating rooms, resuscitation and intensive care, emergencies, and SAMU for the transport of patients by ambulances.

Let me give you a little close-up of our working system. In our hospital, we work in an anesthesia/ICU department. We can work in all operating rooms for all specialties, ICU, and emergency. This makes us flexible with all the activities we offer in the hospital. In the university hospital centers, we are always working in collaboration with a physician anesthetist; this may not always be the case in peripheral hospitals. For each case, we discuss how to proceed with the case, especially if we

must adapt our drugs, material for babies and adults with their multiple comorbidities.

I start the day with an operating room checklist by setting up my basic and difficult intubation tools, suction equipment, accessing the peripheral vein and induction trays; performing the admission of the patient, I check the patient’s identification and the procedure they are coming for. I also perform a pre-anesthetic visit to my patient, place a peripheral venous line, and communicate with the patient to comfort them and act as a “non-drug premedication.” While all this happens, I observe my patient for breathing. After pre-oxygenating the patient, we begin (physician and nurse anesthetist) the induction, and I ventilate my patient just after his apnea. I intubate the patient, attach the tube and check its location, adjust ventilator settings, and recheck my patient’s breathing. Intraoperatively, after the patient has been anaesthetized, my role is to monitor his hemodynamic and respiratory status throughout the operation, so as to act in the event of problems without forgetting to inform the anesthetist-resuscitator. Postoperatively, at the end of the surgical procedure, I extubate the patient respecting all the extubation criteria, and transfer the patient to the post-intervention monitoring room.

Mohammed El Mouhajar, NA, PhD in Health Science Pedagogy and Simulation Training



Mercy Ships

“We can’t change the whole world, but we can change the whole world for one person at a time”—That quote from chief surgeon Gary Parker describes the philosophy shared by most of the voluntary staff on board “Africa Mercy.”

Mercy Ships is an international humanitarian organization based on the Christian faith. From 2022, there are two hospital ships working in some of the world’s poorest countries, mainly in West Africa. The floating hospitals restore people’s dignity

with free surgery and life-changing medical treatment for all without distinction as to race, sex, or religion.

“Africa Mercy”

“Global Mercy”



“Africa Mercy”



“Global Mercy”

The patients are poor people, who don't have access to medical treatment. The diseases or conditions are for instance benign tumors, goiters, burns, lip palate slits, and obstetric fistulas. All of the above can cause social isolation and low life expectations. Currently, only 10% of the people, who queue up at the screening sessions, can be offered an operation. But with the new ship “Global Mercy”—active from 2022, the hope is to help a much larger part of the many people in need.



Capacity building is another goal for the organization. Mercy Ships offer training to local health personnel—for instance, surgeons, nurse anesthetists, and dental students. Furthermore, they train agronomists in sustainable cultivation of crops. The goal is to continue the development, so the host country is capable of meeting the local health needs, also after the Mercy Ships have left the country.



During any one year, approximately 1000 volunteers from 50 different countries work on board Africa Mercy. The common work language is English. It is a fantastic experience to work in an operation team, where everybody comes from different backgrounds and countries, but the mutual respect is clear, and the cooperation is smooth.

In 2019, I was, in Guinea, onboard as a nurse anesthetist for 4 weeks. I lived onboard with 450 other volunteers, did meaningful work, got new friends, and got to know a little part of Africa. Everybody onboard works for free and pays travel expenses and lodging themselves. Everybody has chosen to be there themselves so actually—maybe that is why you only meet happy and content people.

We worked in teams in an operation theater, an anesthesiologist, an anesthetic assistant (CRNAs or assistants depending on their background), surgeons, scrub nurses, and local mentees. The day before, you could see which patients you were assigned to and it was normal to have three patients/day. Every third day, you were “on call,” but since there is no acute activity, it was mostly postoperative bleeding. The tasks and the medication were very much as I was used to at home, but it was so exiting to work in the international setting and really make a difference to the patients. It has been one of the most important things I have done in my professional life.

Dorte Söderberg, Registered Nurse Anesthetist

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