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OVERVIEW OF ADVANCED PRACTICE REGISTERED NURSING

Advanced practice registered nurses (APRNs) are at the forefront of the rapidly changing healthcare system, filling myriad roles in organizations where they provide cost-effective, high-quality care. APRNs are found in virtually every area of the American healthcare system: clinics, hospitals, community health, government, administration, policy-making boards, and private practice. In addition, APRNs have expanded practice into international and transglobal arenas. They serve the most economically disadvantaged as well as the elite. APRNs are deans, educators, consultants, researchers, policy experts, and, of course, outstanding clinicians.

Advanced practice registered nursing is an exciting career choice with many opportunities and challenges. The challenges are often related to the rapidly changing healthcare environment that is contingent on funding decisions made at the state and federal levels of governmental funding. Prospective payment systems, health inequities, required outcome measures, and spiraling costs are daily APRN practice realities. Technology improves diagnostic and treatment results; genetic research is unraveling complex pathophysiology and immunotherapy; and sophisticated “big data” electronic infrastructures change the way information is gathered, stored, analyzed, and shared. Innovative care models are common and include telehealth programs, integrated or complementary modalities, and retail clinics. These and other trends result in a rapidly changing healthcare system, ready for the influence and influx of APRNs.

Graduate education prepares APRNs to be key players in these complex systems. Midrange nursing theories provide strong conceptual foundations for APRN practice and nurse scholars. Nursing research uncovers scientific evidence for best practice, and research utilization skills enable APRNs to bring fresh ideas and proven interventions to healthcare consumers.

Complex policies and laws require that APRNs routinely navigate insurance reimbursement, management, and health policy regulations. Although APRNs were traditionally educated to provide advanced nursing care in specific clinics or hospital units, they now often work across system boundaries as they follow their patients through transitions of care. For example, APRNs care for patients in outpatient clinics, admit them to the hospital, assist in coordinating discharge plans, and collaborate with long-term care organizations, perhaps working with public health agencies to return their patients to their home communities. These new cross-system care models result in regulatory complexity for APRNs. They must be able to legally provide care across systems. Working across state lines results in even more complexity due to each state's laws and regulations. In addition, each healthcare organization can interpret state and federal laws and regulations in its own professional staff policies. Organizations can be more restrictive than laws, but they cannot be less restrictive. For example, state law may not require a signed collaboration agreement between a physician and APRN, but the healthcare system may mandate such an agreement. Given considerable variations among practice environments, APRNs must be experts and proactive in the business and regulatory policies and processes. Staying current is best accomplished by participation in role-specific APRN professional organizations.

ADVANCED PRACTICE REGISTERED NURSING: THEN AND NOW

Advanced specialization of nurses beyond their formal entry-level education has a long and proud history of innovative risk-takers and key events. To capture that history and unify the advanced nursing specialists, the term "advanced practice registered nurse" (APRN) became the common umbrella term used to designate four specialty roles of nurses with formal postbaccalaureate preparation: certified nurse-midwives (CNMs), certified registered nurse anesthetists (CRNAs), nurse practitioners (NPs), and clinical nurse specialists (CNSs).

Nurse anesthetists and nurse-midwives organized nearly a century ago and were the first APRNs to develop national standards for educational programs, professional organizations, and certification. NPs and CNSs standardized their preparation, certification, and licensing incrementally in recent decades. Various scholars and professional organizations have documented the unique history of each APRN role.

A number of factors led nursing leaders to delineate these four APRN roles. A critical factor was obtaining legal status to be directly reimbursed for their nursing services, a gradual process first achieved by nurse-midwives more than 35 years ago and subsequently expanded through federal and state legislation for the other three roles. Reimbursement laws and regulations require that nursing be able to specify the qualifications of these reimbursable APRNs, which contributed to increased standardization of titling, education, and national certification.

Public protection was another factor that led to the delineation of the APRN roles. State boards of nursing are mandated by state legislatures to safeguard the public from unsafe practice, and over time, all states have implemented laws and regulations to ensure that nurses in the four roles have specific expertise and skills. Some states have accomplished this through a second-level licensure process. In other states, APRNs are regulated through title protection and scope of practice laws. In 2008, APRNs reached an agreement defining a desired national model of regulation for the United States. This agreement, the Consensus Model for APRN Regulation: Licensure, Accreditation, Certification, and Education, is known as the LACE model (APRN Consensus Workgroup & APRN Joint Dialogue Group, 2008). The National Council of State Boards of Nursing (NCSBN) created a map in 2011 to track the implementation of the consensus model by the United States. A numerical point system to rate implementation of the LACE model was created by NCSBN with 28 points indicating full consensus adaptation by a state and 0 points indicating no adaptation (NCSBN, 2017b). By 2017, 15 states had fully implemented the LACE model and received a score of 28, 10 states and the District of Columbia enacted 75% to 96% (21–27 points) of the LACE model, 17 states scored 14–20 points, and 8 states received fewer than 14 points (NCSBN, 2017b). The changes in state laws required complex legislative initiatives led by APRNs (Kopanos, 2014). Most other states' APRN groups are working toward amending state nurse practice laws by adopting the LACE model of regulation.

A final factor influencing APRN standardization has been the adoption of national APRN curricular guidelines and program standards. These standards were developed by many specialty organizations and brought through negotiations to consensus by nursing organizations such as the American Association of Colleges of Nursing (AACN), the American Nurses Association (ANA), and the National Organization of Nurse Practitioner Faculties (NONPF). APRN educational standards have been endorsed by numerous nursing specialty organizations in the past decade and are used for national program accreditation.

Nursing's Scope and Standards of Practice (ANA, 2015b) defines APRNs as having advanced specialized clinical knowledge and skills through master's or doctoral education that prepares them for specialization, expansion, and advancement of practice. "Specialization" is concentrating or limiting one's focus to part of the whole field of nursing. "Expansion" refers to the acquisition of new practice knowledge and skills, including knowledge and skills legitimizing role autonomy within areas of practice that overlap traditional boundaries of medical practice. "Advancement" involves both specialization and expansion and is characterized by the integration of theoretical, research-based, and practical knowledge that occurs as part of graduate education in nursing. This APRN definition, which is regulated by state and federal laws, does not include nurses with advanced preparation for administration, informatics, education, public health, or research; those roles are considered "advanced nursing practice" and are not regulated, a fine but important legal distinction.

APRNs are educated within master's or doctoral nursing programs. Although CNSs have always required master's nursing degrees, in the past nurse-midwives, nurse anesthetists, and NPs were not all prepared in graduate nursing programs. Now, however, NPs must receive their education in graduate master's or clinical doctoral programs in nursing. CRNAs are prepared in master's or doctoral graduate programs. Although the majority of CNMs are prepared in graduate nursing programs, some nurse-midwifery programs are located in health-related professional schools.

Because of their unique historical underpinnings, members of each APRN category have strong allegiance to their titles and their professional organizations. At times, this allegiance has been a barrier to the development of consistent language regarding APRN roles because each group has developed its own education, history, and titles. However, significant progress continues to be made in identifying commonalities and working together in coalitions to improve regulations and policies restricting APRN practice.

Research-based practice (sometimes called "evidence-based" practice) is a key characteristic of APRN practice. Clinical doctoral nursing programs emphasize and expand the utilization of evidence-based practice, especially in terms of preparing APRNs to be organizational change agents. Graduates of clinical doctoral programs complete quality improvement projects to hone their skills at implementing research-based practice into all levels of the healthcare system.

Through a consensus-building process, the AACN formulated curricular elements for graduate APRN education (AACN, 2011), specifying the content of the graduate core curriculum and the advanced practice nursing core curriculum in master's programs (Exhibit 1.1). Practice doctoral nursing programs are based on the *Essentials of Doctoral Nursing Education for Advanced Practice Nurses* (AACN, 2006; Exhibit 1.2). The role-specific professional nursing organizations have further delineated specialized core competencies; documents are readily available on their websites and are frequently updated.

The core clinical content requires advanced health and physical assessment, advanced physiology and pathology, and advanced pharmacology (often referred to as "the three Ps"). These courses must be taught across the life span, with additional specific content required for students in each specialty area. For example, nurse-midwifery students need additional content on assessment of pregnant women and newborn infants, nurse anesthetist students require extensive content on anesthetic agents, and psychiatric/mental health students need additional content on antipsychotic medications.

There are also professional ethics standards for APRNs. In addition to issues related to confidentiality and relationships, APRNs must provide support to patients and their families in making ethical decisions related to treatment options (ANA, 2015a). Although ethical issues appear to be more prominent in tertiary care settings, issues such as abuse and neglect are

Exhibit 1.1 ESSENTIAL ELEMENTS OF MASTER'S CURRICULUM FOR ADVANCED PRACTICE NURSING

- I. Background for Practice From Sciences and Humanities
- II. Organizational and Systems Leadership
- III. Quality Improvement and Safety
- IV. Translating and Integrating Scholarship Into Practice
- V. Informatics and Healthcare Technologies
- VI. Health Policy and Advocacy
- VII. Interprofessional Collaboration for Improving Patient and Population Health Outcomes
- VIII. Clinical Prevention and Population Health for Improving Health
- IX. Master's-Level Nursing Practice

Source: American Association of Colleges of Nursing. (2011). *The essentials of master's education for advanced practice nursing*. Washington, DC: Author.

Exhibit 1.2 ESSENTIALS OF DOCTORAL EDUCATION AND COMPETENCIES FOR ADVANCED NURSING PRACTICE

- I. Scientific Underpinnings for Practice
- II. Organizational and Systems Leadership for Quality Improvement and Systems Thinking
- III. Clinical Scholarship and Analytical Methods for Evidence-Based Practice
- IV. Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Healthcare
- V. Healthcare Policy for Advocacy in Healthcare
- VI. Interprofessional Collaboration for Improving Patient and Population Health Outcomes
- VII. Clinical Prevention and Population Health for Improving the Nation's Health
- VIII. Advanced Practice Nursing

Source: American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. Washington, DC: Author. Retrieved from <http://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf>

present in all settings. APRNs are frequently called on to work with professional colleagues, patients, and their families to resolve ethical dilemmas.

All APRNs collaborate with other healthcare professionals to promote patient-centered care. Collaboration is a standard of APRN care and is also referenced in state and federal laws. Interprofessional and interdisciplinary teams require APRNs to clearly identify their unique contributions to patient outcomes. APRNs also collaborate with patients and their families in planning care and making decisions about the most acceptable treatments.

Recent scholarship emphasizes the benefits of APRN care including cost-effective, safe outcomes with positive patient satisfaction (Newhouse et al., 2011; Rantz, Birtley, Flesner, Crecelius, & Murray, 2017; Woo, Lee, & Tam, 2017), especially essential in an era of rapidly changing insurance and health system reform. In fact, the literature supports the use of APRNs in all aspects of healthcare delivery including anesthesia administrations, primary care, elder care, maternity and newborn care, and acute care (Edkins, Cairns, & Hultman, 2014; Newhouse et al., 2011; Rantz et al., 2017; Woo et al., 2017).

APRNs and Doctoral Education

The previous description of content in APRN educational and professional standards demonstrates the complexity and depth of APRN preparation and practice. Some nurse leaders question whether APRNs can be fully prepared for their scope of practice in 2-year master's programs. This has prompted discussion of the feasibility of doctoral preparation being required for APRN practice (Edwardson, 2004).

Doctoral APRN education existed in nursing doctorate (ND) programs as early as the mid-1980s at Rush University, Case Western Reserve University, and the University of Colorado, all of which awarded ND degrees to students completing NP programs. These NP programs have now discontinued the ND degrees; they have been replaced by doctorate of nursing practice (DNP) degrees. The DNP is a new degree first advocated by the AACN and the NONPF. In October 2004, the nation's nursing deans attending AACN passed a resolution to move APRN education to a practice doctorate level by 2015. Although a recommendation rather than a mandate, much progress has been made in increasing the number of NPs with doctoral degrees in the past decade. By early 2014, more than 240 DNP programs were under way nationwide (Kirschling, 2014).

There are pros and cons related to the DNP degree. The increased time and cost for students are balanced by the increase in knowledge, skill, and prestige that this doctoral degree confers. Pharmacy, audiology, physical therapy, and psychology have doctoral education as their entry to practice. The practice community has quite quickly embraced the DNP preparation; however, whether employers will compensate DNP graduates at levels commensurate with their education is undecided. Physician reactions to

the nursing practice doctorate have been mixed; for example, several states have implemented legislation that reserves the term "doctor" for physicians in clinical arenas. A joint dialogue statement eloquently points out that "Graduate educational programs in colleges and universities in the United States confer academic degrees, which permit graduates to be called 'doctor.' No one discipline owns the title 'doctor'" (Nurse Practitioner Roundtable, 2008, p. 2). The DNP degree continues to be debated; the new degree is propelling APRN roles forward with new knowledge and abilities at a time when healthcare reform is at the forefront of the national conversation. Understanding each of the roles is essential.

Nurse Practitioners

Nurse practitioners (NPs) are registered nurses with master's or doctoral nursing preparation who perform comprehensive assessments, promote health, and treat and prevent illness and injury. In doing so they diagnose, develop differential diagnoses, and order and interpret diagnostic tests. They prescribe pharmacological and nonpharmacological treatments while providing care in primary, acute, and long-term care settings. The population foci for NPs include adult-gerontological, family (across the life span), neonatal, pediatrics, women's health-gender related, and psychiatric mental health. NPs practice autonomously and in collaboration with other healthcare professionals as researchers, consultants, and patient advocates.

The NP role first developed in primary care settings. However, NPs now function in tertiary care, and specific competencies and examinations have been developed for acute and emergency-care NPs (American Academy of Emergency Nurse Practitioners, 2015; NONPF, 2016).

Health promotion and health maintenance are emphasized in all the APRN nursing standards. Nurses have traditionally emphasized health-promotion activities as being a key characteristic of the professional practice of nursing. Health promotion, whether it is for persons who have no specific illness or for persons who have chronic health problems, is critical. Implementation of care that focuses on health promotion has also been shown to be cost-effective (Aleshire, Wheeler, & Prevost, 2012; Mundinger et al., 2000; Safriet, 1998). Horrocks, Anderson, and Salisbury (2002) noted that NPs offered more advice on self-care and management than did physicians, and they seemed to identify physical abnormalities more frequently. However, there was no difference in patient health outcomes between the NP- and physician-managed patient groups. A systematic review by Stanik-Hutt et al. (2013) spanning 18 years of research on the quality and effectiveness of care provided by NPs found that outcomes for NPs were comparable to physicians (MDs). Findings also indicated that patient outcomes on satisfaction with care were similar for NPs and MDs.

The NP movement began at the University of Colorado. Loretta Ford, PhD, RN, and Henry Silver, MD, both full professors, collaborated to launch

a postbaccalaureate program to prepare nurses for expanded roles in the care of children and their families. Professors Ford and Silver (Ford, 1979) recognized that nurses had the ability to assess children's health status and define appropriate nursing actions. The purpose of the first NP demonstration project was to implement new roles to improve the safety, efficacy, and quality of healthcare for children and their families (Ford, 1979). Although the project's initial focus was on children and their families, Ford noted that she was confident that nurses could be educated to meet the health needs of community-dwelling persons across the life span. Nurses in the Colorado program received 4 months of intensive didactic education in which assessment skills and growth and development were emphasized. The nurses then completed a 20-month precepted clinical rotation in a community-based setting.

Following Colorado's lead, many schools initiated educational programs, admitting nurses with varying levels of educational preparation. The growth of the NP movement was facilitated by many studies through the years, such as those summarized in a meta-analysis by Brown and Grimes (1995). Over the years, NPs have demonstrated that they safely provide high-quality healthcare, and the NP role has expanded into many new practice areas (Martin, 2000; Mundinger et al., 2000; Newhouse et al., 2011; Stanik-Hutt et al., 2013). Although Dr. Ford's goal initially was to prepare NPs within master's programs, societal demand for NPs led to a proliferation of postbaccalaureate continuing education programs rather than graduate education (Ford, 1979, 2005). Federal funding for NP programs also prompted the initiation of numerous postbaccalaureate and graduate NP programs. The length of these early NP programs varied from a few weeks to 2 years, with many certificate programs being 9 to 12 months in length.

The proliferation of postbaccalaureate programs rather than graduate programs for the education of NPs was partially attributable to the resistance of graduate nursing programs to recognize NPs as being a legitimate part of nursing. A number of nursing leaders termed NPs "physician extenders" and did not view NP practice as "nursing." This lack of enthusiasm for NP education exhibited by numerous nursing leaders in the 1960s and 1970s may also have been fostered by the fact that the NP movement grew out of a collaborative nurse-physician effort rather than being solely initiated by nurses. The early NP curricula were viewed as being based on the medical model rather than a nursing framework, although that was not the focus of Dr. Ford's original NP curriculum, which emphasized child development and health promotion (Ford, 1979).

The NP domains and competencies were based on the work by Brykczynski (1989), Benner (1984), and Fenton (1985). The seven domains are (a) management of client health/illness status, (b) NP-patient relationship, (c) teaching/coaching function, (d) professional role, (e) management and negotiation of healthcare delivery systems, (f) monitoring and

ensuring the quality of healthcare practice, and (g) culturally sensitive care (NONPF, 2006). Specific competencies are described for each domain. These domains are detailed and encompassing, indicating that APRN practice requires a broad range of knowledge and expertise. NONPF revised the domains for all NP programs in 2012 and developed nine core competencies: scientific foundation, leadership, quality, practice inquiry, technology and information literacy, policy, health delivery system, ethics, and independent practice. NPs are prepared in a multitude of specialties, including acute care, adult health, family health, gerontology, pediatrics, psychiatry, neonatology, and women's health. Population-specific competencies have been elaborated and defined (NONPF, 2013). In 2017, NONPF released an updated, nationally validated set of NP core competencies and curriculum content to support competencies for entry to practice for all NPs that aligned with the nine competencies released in 2012 (NONPF, 2017).

The ANA, along with other organizations, has developed many types of practice standards, some broadly inclusive and others specialty focused (ANA, National Association of Pediatric Nurse Practitioners [NAPNAP], & Society of Pediatric Nurses [SPN], 2010). For example, the ANA, NAPNAP, and SPN created a joint document that outlines pediatric nursing competencies at both basic and advanced practice levels.

The American Association of Nurse Practitioners (AANP, 2018) estimated that there were more than 248,000 NPs in the United States in 2017, 97.8% of whom were prepared with graduate degrees and that 86.6% of NPs are certified in an area of primary care. Many NPs assume positions that combine clinical practice with employment as educators, administrators, and policy makers or choose other employment.

After completing graduate education, NPs are eligible to sit for national certification examinations (NCE) in their specialty areas. Certification is a mechanism for the nursing profession to attest to the entry-to-practice knowledge of NPs. The certification requirement has been adopted by third-party payers such as the Centers for Medicare and Medicaid Services (CMS) and by most state boards of nursing as a standard that assists in protecting the public from unsafe providers. Certification examinations are offered by a variety of bodies: the American Nurses Credentialing Center (ANCC), the American Academy of Nurse Practitioners Certification Board (AANPCB), the Pediatric Nursing Certification Board (PNCB), the American Association of Critical Nurses Certification Corporation (AACNCC), and the National Certification Corporation (NCC) for the obstetric, gynecologic, and neonatal specialties.

Changes in reimbursement laws, regulations, and policies that allow for direct reimbursement of NPs, the rapid increase in managed care as a mechanism to control healthcare costs, and the growing recognition of the significant contributions of NPs to positive patient outcomes have resulted in a rapid increase in the number of NP programs, particularly DNP programs. The AANP (2018) estimated that 23,000 new NPs graduated in

2015–2016. APRNs who are savvy about ascertaining the gaps in health-care and designing roles for themselves that are not merely physician-replacement roles are likely to be very successful in obtaining satisfactory employment.

Scope of practice is regulated by state laws and describes the legal boundaries of health professional practice. NPs practicing outside the designated scope of practice risk legal sanctions and potential liability (Klein, 2005). Changes in scope of practice reflect the dynamic evolution of NP roles. However, great variability exists regarding the regulation of acute and primary care NPs by individual states.

Relative to CNMs and CRNAs, NPs have a relatively short history in the healthcare delivery system. However, in this short period of time, they have gained the respect of many health professionals and of their patients (Scherer, Bruce, & Runkawatt, 2007). NPs have been featured in the media for their expert opinions on healthcare-related matters and the significant contributions they are making to improving health. New areas of practice and settings for NPs continue to arise and in the next 10 years, the Bureau of Labor Statistics predicts a job growth rate for NPs to be 31%, much greater than the average growth rate of 7% (U.S. Department of Labor, 2017). In many instances, NPs have succeeded in caring for persons in rural areas, in inner cities, and for other vulnerable groups. NPs have established themselves as an integral part of the healthcare system.

Nurse-Midwives

Nurse-midwives are unique among APRNs because they are educated in two different professions. Midwifery is a profession in its own right and in many countries around the world nursing is not a prerequisite. The American College of Nurse-Midwives (ACNM, 2012b) defines “certified nurse-midwives” (CNMs) as individuals educated in the two disciplines of midwifery and nursing who complete a graduate degree program accredited by the Accreditation Commission for Midwifery Education (ACME) and pass the NCE of the American Midwifery Certification Board (AMCB). It is important to understand that there are various certifications for midwives, with CNM being just one. Certified midwives (CMs) receive a background in a health-related field other than nursing and graduate from a graduate midwifery education program accredited by the same organization that accredits CNMs, ACME. In contrast, certified professional midwives (CPMs), registered midwives (RMs), and licensed midwives (LMs) enter midwifery through various accredited and nonaccredited programs that may include required academic courses or an apprenticeship program. According to the ACNM (2012b), midwifery as practiced by CNMs and CMs encompasses a full range of primary healthcare services for women from adolescence beyond menopause. These services include the independent provision of primary care, gynecologic and family planning services, preconception care, care during pregnancy, childbirth and the postpartum period, care of the

normal newborn during the first 28 days of life, and treatment of male partners for sexually transmitted infections. CNMs and CMs provide initial and ongoing comprehensive assessment, diagnosis, and treatment. They conduct physical examinations; prescribe medications including controlled substances and contraceptive methods; admit, manage, and discharge patients; order and interpret laboratory and diagnostic tests; and order the use of medical devices. Midwifery care practiced by CNMs and CMs also includes health promotion, disease prevention, and individualized wellness education and counseling. These services are provided in partnership with women and families in diverse settings such as ambulatory care clinics, private offices, community and public health systems, homes, hospitals, and birth centers (ACNM, 2012a, p. 1).

Although the focus of midwifery care has historically been prenatal care and managing labor and birth, nurse-midwives are primary care providers for essentially healthy women, including those with acute and stable chronic conditions. Nurse-midwives strongly believe in supporting natural life processes and not using medical interventions unless there is a clear need. This belief and others are reflected in the 2004 ACNM (2004, p. 1) philosophy statement.

Midwives also believe in:

- Watchful waiting and nonintervention in normal processes
- Appropriate use of interventions and technology for current or potential health problems
- Consultation, collaboration, and referral with other members of the healthcare team as needed to provide optimal health care (ACNM, 2004, para. 1)

Midwifery is a very old profession, mentioned in the Bible. The practice of midwifery declined in the 18th and 19th centuries, and obstetrics developed as a medical specialty. In 1925, Mary Breckinridge established the Frontier Nursing Service (FNS) in Kentucky and was the first nurse to practice as a nurse-midwife in the United States (Breckinridge, 1952). She received her midwifery education in England and returned to the United States with other British nurse-midwives to set up a system of care similar to that which she had observed in Scotland. The FNS was begun to care for women and infants who were without adequate healthcare. The nurse-midwives of the FNS provide quality maternal and infant care with significantly improved outcomes.

The first U.S. nurse-midwifery educational program was started at the Maternity Center Association, Lobenstein Clinic, in New York City in 1932 and the ACNM was incorporated in 1955. Nurse-midwifery practice grew slowly until the late 1960s and early 1970s, when the profession experienced increased acceptance and consumer demand increased for nurse-midwives and the kind of care they provided (King et al., 2015). In 2017, there were 11,826 CNMs and 101 CMs in the United States (ACNM, 2018).

Nurse-midwifery education began with certificate programs and has progressed to graduate education. There are presently 39 ACME-accredited programs in the United States. Most midwifery programs are in schools of nursing, but two are in university-based health-related professional schools. A direct-entry (non-nursing) route to midwifery education, using the same nationally recognized accreditation and certification standards, began in 1997 at the State University of New York (downstate campus). CM students are required to complete certain prerequisite health sciences courses, such as chemistry, biology, nutrition, and psychology, before beginning midwifery education. In addition, certain knowledge and skills common in nursing practice are required before beginning the midwifery clinical courses in the program (ACME, 2005). CMs are currently authorized to practice in five states (ACNM, 2018). CPMs, another category of direct-entry midwives who attend out-of-hospital births, are recognized in approximately half of the states and have a different scope of practice and regulation process than midwives who graduate from ACME-accredited programs.

In the 1970s, national accreditation of nurse-midwifery educational programs and national certification of nurse-midwives was begun by ACNM. The ACME accreditation process is recognized by the U.S. Department of Education, and the certification process now conducted by the AMCB is recognized by the National Commission of Health Certifying Agencies. As a result of national accreditation and certification, CNMs have direct third-party reimbursement and prescriptive authority in all 50 states (ACNM, 2018).

The ACNM document, *Core Competencies for Basic Midwifery Practice* (ACNM, 2012a), describes the skills and knowledge that are fundamental to the practice of a new graduate of an ACME-accredited educational program. These competencies guide curricular development in midwifery programs and are used in the nationally recognized accreditation process. Competencies described in the document include professional responsibilities; the midwifery management process; midwifery care of women, including primary care; preconception care; gynecologic care (including contraceptive methods); perimenopausal and postmenopausal care; prenatal, intrapartum, and postpartum care of the childbearing woman; and care of the newborn. Hallmarks of midwifery practice are also delineated.

Nurse-midwives in the United States have consistently demonstrated that their care results in excellent outcomes and client satisfaction among all women, including the large proportion of underserved, uninsured, low-income, minority, and otherwise vulnerable women for whom CNMs provide care. Births attended by CNMs and CMs occur primarily in hospitals; more than 94% of births in the United States occurred in hospitals in 2014, although the number of home and freestanding birth center births has been rising (ACNM, 2018; MacDorman, Mathews, & Declercq, 2014). Research has demonstrated fewer interventions, including lower cesarean birth rates, among CNM-attended births versus physician-attended births, as well as outcomes at least comparable to physician-attended births (Blanchette, 1995;

Hamlin, 2017; MacDorman & Singh, 1998; Newhouse et al., 2011; Rosenblatt et al., 1997; Thornton, 2017).

The Lancet published a four-paper series advocating for midwifery care in 2014. The four papers examined midwifery globally and advocated for an increased midwife presence worldwide to improve maternal and neonatal outcomes (Homer et al., 2014; Renfrew et al., 2014; ten Hoop-Bender et al., 2014; Van Lerberghe et al., 2014). A systematic review and meta-analysis of midwifery care globally demonstrated that women receiving midwifery-led care experienced equivalent or better outcomes—including fewer episiotomies, less anesthesia use, reduced likelihood of preterm birth, and more spontaneous vaginal births—than those receiving other types of care (Sandall, Soltani, Gates, Shennan, & Devane, 2013). Another systematic review identified exclusively U.S.-based studies and found similar results, with equivalent or superior outcomes in initiating breastfeeding, operative and cesarean births, and perineal lacerations (Newhouse et al., 2011). Additional research since 2011 confirmed Newhouse et al.'s finding (Hamlin, 2017; Thornton, 2017). From a policy perspective, midwifery care can be a cost-effective and sustainable approach to meeting society's women's healthcare needs (Renfrew et al., 2014).

Over the nearly 100-year history of nurse-midwifery/midwifery in the United States, a strong base of support documented by research has been developed and is ongoing. The number of educational programs and practitioners has grown substantially. The passage of the Patient Protection and Affordable Care Act in 2010 resulted in a key provision sought by CNMs for nearly 20 years: the same reimbursement as physicians under Medicaid for providing the same service (Bradford, 2013). During this era of healthcare reform, as healthcare dollars continue to be carefully allocated and specific outcomes measured more closely, CNMs and CMs can be expected to play a more prominent role in providing quality primary healthcare to women.

Clinical Nurse Specialists

Clinical nurse specialists (CNSs) are leaders and experts in evidence-based nursing practice (National Association of Clinical Nurse Specialists [NACNS], 2014). They are registered professional nurses with graduate preparation earned at the master's or doctoral level. They may also be educated in a postmaster's program that prepares graduates to practice in specific specialty areas (Lyon, 2004; Lyon & Minarik, 2001). In 2017, 216 schools offered CNS programs, an increase from 147 programs in 1997 (Dayhoff & Lyon, 2001; NACNS, 2017a). The NACNS has developed curriculum recommendations for CNS education (NACNS, 2011) as well as competencies to reflect the *Essentials of Doctoral Education for Advanced Nursing Practice* (NACNS, n.d.). CNSs have traditionally worked in hospitals, but they now practice in many settings, including nursing homes, schools, home care, and hospice. Essential characteristics and essential core content of NACNS

for CNS programs are based on CNSs' spheres of influence: patients/clients and patients, nurses and nursing practice, and organizations/systems.

The CNS role has had a long history in the United States. The CNS role was developed after World War II. Before that time, specialization for nurses was in the functional areas of administration and education. Recognizing the need to have highly qualified nurses directly involved in patient care, the concept of CNSs emerged. Reiter (1966) first used the term "nurse clinician" in 1943 to designate a specialist in nursing practice. The first master's program in a clinical nursing specialty was developed in 1954 by Hildegard E. Peplau at Rutgers University to prepare psychiatric CNSs. That program launched the CNS role that has been an important player in the nursing profession and healthcare arena ever since, although the role has not been without controversy. Healthcare restructuring and cost-cutting initiatives in the 1980s and 1990s resulted in a loss of CNS positions in the United States. However, after increasingly frequent reports of adverse events in hospital settings in the 1990s (IOM Committee on the Quality of Healthcare in America, 2001; Kohn, Corrigan, & Donaldson, 2000), it became apparent that CNSs were critical to obtaining quality patient outcomes (Clark, 2001; Heitkemper & Bond, 2004), with the result that CNSs are again seen as valuable professionals in many U.S. healthcare systems.

As with the NP movement, the availability of federal funds for graduate nursing educational programs and the Professional Traineeship Program through Health Resources and Services Administration (HRSA) that provides stipends for students have played a role in the development of many graduate CNS programs.

The development and use of complex healthcare technology in the management of patients in hospitals and intricate surgical procedures have resulted in increasing acuity and complexity of patient care delivery. Thus, there is a need for nurses with advanced knowledge and expertise to be integrally involved in working with staff to assess, plan, implement, and evaluate care for these patients. Many hospitals have used CNSs as care coordinators and case managers in which they coordinate the care of patients with acute or chronic illnesses during their hospital stays and prepare them for discharge to their homes or other care facilities. CNSs have also been used as discharge planners working with staff to plan posthospital care for patients who have complex health problems (Naylor et al., 1994; Neidlinger, Scroggins, & Kennedy, 1987). Their importance in care coordination over the care continuum is only now being lauded, exemplified in the work of Naylor and colleagues, who reported that use of gerontologic CNSs as discharge planners resulted in fewer readmissions of elderly cardiac patients.

Since its inception, the CNS role has suffered from role ambiguity (Rasch & Frauman, 1996; Redekopp, 1997). Although the initial vision was for CNSs to be integrally involved in patient care for a specific patient population, they have assumed many other roles, such as staff and patient educators, consultants, supervisors, project directors, and more recently,

case managers. Redekopp (1997) noted that it is difficult for CNSs to precisely describe their roles to others because their roles are continually evolving to meet the health needs of a changing patient population in an ever-changing healthcare system. Role ambiguity has made it difficult to measure the impact that CNSs have on patient outcomes. Thus, when budgetary crises have occurred in hospitals, CNSs have frequently had to advocate strongly to maintain their positions because outcome data to support the positive impact of their practice have either not been readily available or simply did not exist.

The area of specialization for a CNS may be defined by population, setting, disease or medical subspecialty, type of care, or type of problem. CNS specialties and subspecialties include psychiatric/mental health nursing, adult health, gerontology, oncology, pediatrics, cardiovascular, neuroscience, rehabilitation, pulmonary, renal, diabetes, and palliative care, to name a few. However, certification exists only for the population areas of adult/gerontology, pediatrics, and neonatal. The two certifying organizations include the ANCC and the AACNCC (NACNS, 2017b). Specialty certifications may be obtained through various specialty nursing organizations. However, some organizations do not specify that master's degrees are required for certification in the specialty, causing confusion regarding the regulation and title of CNS. In the past, many CNSs have not sought third-party reimbursement, so they have not taken specialty CNS certification examinations. With changes in state nursing practice acts and the increase in third-party payment and prescriptive privileges for APRNs, the number of certified CNSs is now increasing. A 2016 census of CNSs conducted by NACNS found that almost 68% of the respondents were nationally certified (NACNS, 2017a). The majority of states require national certification; half of all states allow independent practice for CNSs and prescriptive authority has been granted to CNSs by less than one-third of states (NCSBN, 2017a). CNSs are regulated by state boards of nursing although the APRN role for CNSs is not recognized by three states (NCSBN, 2017a).

In the late 1980s and early 1990s, many discussions and debates took place around the merging of the CNS and NP roles (Page & Arena, 1994). Several studies were conducted comparing the knowledge and skills of these two advanced practice roles (Elder & Bullough, 1990; Fenton & Brykczynski, 1993; Forbes, Rafson, Spross, & Kozlowski, 1990; Lindeke, Canedy, & Kay, 1996). Research indicated that there were many similarities in the educational preparation of these two groups of APRNs. Many CNSs viewed the proposed merger as the demise of the CNS role. NPs were concerned that they would need to abandon the title of NP, a title that had become familiar to many patients and healthcare professionals. The NACNS was formed in 1995 to assist CNSs and to provide a vehicle to publicize the many contributions that CNSs have made and continue to make in providing quality patient care. The CNS role today is a dynamic and needed advanced practice nursing role, and many in the nursing profession anticipate that it will continue to exist for years to come.

Certified Registered Nurse Anesthetists

Nurse anesthesia practice traces its origins to the inception of surgical anesthesia, a major innovation that allowed for the development of surgery as a means of treatment for disease. Anesthesia in the late 1800s was hazardous and crude. There was not a good understanding of the pharmacologic and physiologic effects of anesthetic drugs, primarily diethyl ether and chloroform. These anesthetics were often delivered in a “careless manner” by a surgical resident fresh out of medical school who had little or no training in the effects of the anesthetic (Bankert, 1989, p. 22). This led to disastrous results for patients. Thus, some surgeons turned to religious Hospital Sisters who would devote their entire attention to the well-being of the patient during the delivery of the anesthetic. One of the Hospital Sisters, Sister Mary Bernard, was the first identified nurse who delivered anesthesia at St. Vincent’s Hospital in Erie, Pennsylvania, in 1877 (Bankert, 1989).

The practice of utilizing nurses to deliver anesthesia spread rapidly through the Catholic and secular hospitals of the late 1800s and early 1900s. In 1912, a formal program of training in the delivery of anesthesia for nurses was developed in Springfield, Illinois, by Mother Magdalene Wiedlocher of the Third Order of the Hospital Sisters of St. Francis. This Order of Hospital Sisters went on to establish St. Mary’s Hospital in Rochester, Minnesota, that we now know as the origin of the Mayo Hospitals. These nurse anesthetists at St. Mary’s Hospital became known as experts in the delivery of anesthesia who devoted their full attention and skill to the well-being of the patient receiving anesthesia. One nurse anesthetist, in particular, Alice Magaw, stood out as an example of the diligent care delivered by nurse anesthetists. In addition to skillfully delivering anesthetics, Magaw recorded her work and published it in respected medical journals of the time. One such paper published in 1906 documented 14,000 anesthetics at St. Mary’s Hospital “without a death directly attributable to anesthesia” (Bankert, 1989, p. 31). Magaw’s legacy is honored in the motto of the American Association of Nurse Anesthetists (AANA): Safe and effective anesthesia care (AANA, n.d.).

Certified registered nurse anesthetists (CRNAs) are registered nurses who have become anesthesia specialists by taking a graduate curriculum that focuses on the development of clinical judgment and critical thinking. They are qualified to make independent judgments concerning all aspects of anesthesia care based on their education, licensure, and certification by the National Board of Certification and recertification for nurse anesthetists. CRNAs are legally responsible for the anesthesia care they provide and are recognized in state law in all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands (AANA, 2013).

Anesthesia care is delivered in collaboration with surgeons, podiatrists, dentists, radiologists, psychiatrists, cardiologists, and anesthesiologists in outpatient, inpatient, and office-based settings.

The CRNA scope of practice includes comprehensive anesthesia and pain care across the life span in many different settings. The scope includes:

1. Performing and documenting a preanesthetic assessment and evaluation of the patient, including requesting consultations and diagnostic studies; selecting, obtaining, ordering, and administering preanesthetic medications and fluids; and obtaining informed consent for anesthesia
2. Developing and implementing an anesthetic plan
3. Initiating the anesthetic technique that may include general, regional, local, and sedation
4. Selecting, applying, and inserting appropriate noninvasive and invasive monitoring modalities for continuous evaluation of the patient's physical status
5. Selecting, obtaining, and administering the anesthetics, adjuvant and accessory drugs, and fluids necessary to manage the anesthetic
6. Managing a patient's airway and pulmonary status using current practice modalities
7. Facilitating emergence and recovery from anesthesia by selecting, obtaining, ordering, and administering medications, fluids, and ventilatory support
8. Discharging the patient from a postanesthesia care area and providing postanesthesia follow-up evaluation and care
9. Implementing acute and chronic pain management modalities
10. Responding to emergency situations by providing airway management, administration of emergency fluids and drugs, and using basic or advanced cardiac life support techniques (AANA, 2013)

The CRNA may also have other responsibilities that could include administration and management activities, education, research, quality improvement, interdepartmental liaison, committee appointments, and oversight of other nonanesthesia departments.

Nurse anesthesia educational programs are offered at both the master's level and the clinical doctoral level. The Council on Accreditation (COA) of Nurse Anesthesia Educational Programs is the entity that accredits all nurse anesthesia educational programs regardless of the degree offered. This formal process of accreditation began in 1952 (Bankert, 1989). At this time, nurse anesthesia programs at the master's degree level are a minimum of 24 months in length and at the doctoral level, a minimum of 36 months. All nurse anesthesia educational programs must provide a minimum number of cases and a minimum curriculum that includes pharmacology of anesthetic agents and adjuvant drugs including concepts in chemistry and biochemistry (105 hours); anatomy, physiology, and pathophysiology (135 hours); professional aspects of nurse anesthesia practice (45 hours); basic and advanced principles of anesthesia practice including physics, equipment, technology, and pain management (105 hours); research (30 hours); clinical correlation conferences (45 hours); radiology; and ultrasound. In addition, the curriculum must include three separate comprehensive graduate-level courses in advanced physiology/pathophysiology, advanced health assessment, and advanced pharmacology.

Students must administer a minimum of 550 clinical cases that prepare them for the full scope of practice in a variety of clinical settings (COA, 2004). Completion of the nurse anesthesia educational program and the required cases qualifies the student to sit for the NCE.

Following publication of the AACN's initiative to move education of advanced practice nursing into doctoral frameworks by 2015, the AANA established a task force on doctoral education for nurse anesthetists in 2005. The task force recommended to the board of directors of the AANA that all nurse anesthesia educational programs be offered in a clinical doctoral framework by the year 2025. The COA will not consider any new master's degree programs for accreditation beyond 2015. Students accepted into an accredited program on January 1, 2022, and thereafter must graduate with doctoral degrees (COA, 2004). Unlike other nursing advanced practice specialties, nurse anesthesia programs are not necessarily housed in schools of nursing. Of the 115 programs of nurse anesthesia accredited in the United States, 39 are in a variety of non-nursing academic units (COA, 2017). These programs may offer the Doctorate of Nurse Anesthesia Practice (DNAP) degree. Wherever the educational program is housed, all nurse anesthesia educational programs must be accredited through the COA and the graduates must pass the NCE. Thus, the public is assured that every nurse anesthetist has met a set of predetermined qualifications for entry into practice.

In 1986, the passage of the Omnibus Budget Reconciliation Act marked nurse anesthetists as the first group of advanced practice nursing professionals to be granted direct reimbursement for anesthesia and pain management services to Medicare enrollees. This paved the way for entrepreneurship and innovative practice settings for nurse anesthetists. Furthermore, in 2001, the CMS published its anesthesia care rule granting state governors the ability to opt out of the federal physician supervision requirement, thus allowing nurse anesthetists to work in collaboration with other healthcare providers without physician supervision (AANA, 2018). To date, 17 states have opted out of the CMS requirement for physician supervision of nurse anesthetists. No states have opted out since 2012. In a study completed after states had opted out of the requirement and involving outcomes in states with physician supervision and those opt-out states, no negative outcomes or harm were found when CRNAs delivered anesthesia without physician supervision (Dulisse & Cromwell, 2010).

Nurse anesthesia practice is remarkably varied and flexible. Nurse anesthetists function in fast-paced trauma team settings in urban areas and in highly independent rural settings. Nurse anesthetists provide critically needed surgical and obstetric anesthesia, acute pain management, trauma stabilization, and, in some instances, chronic pain management for the rural communities in which they live. Without the services of nurse anesthetists, many of these small rural hospitals would close (Siebert, Alexander, & Lupien, 2004). Nurse anesthetists have served in the military in peace and on the battlefield in every armed conflict since the World War I, including the most recent conflicts in Iraq and Afghanistan (AANA, 2010). Nurse anesthetists are a crucial part of the modern healthcare system

today both in terms of quality of care and access to highly skilled affordable care. The education and training of nurse anesthetists position these advanced practice nurses to lead healthcare into the future.

International

Although the content in this chapter has focused on APRNs in the United States, it is encouraging to see the continuing development of these roles in other countries. Midwifery, a profession often distinct from nursing, has a longer history internationally than in the United States. The International Confederation of Midwives, so named in 1954, has more than 130 midwifery association members representing 112 countries (see www.internationalmidwives.org). The recent *Lancet Series on Midwifery* highlighted midwifery as “a vital solution to the challenges of providing high-quality maternal and newborn care for all women and newborn infants, in all countries” (Renfrew et al., 2014, p. 1). Clinical specialization in nursing has existed in many countries for a long time. In countries such as Australia, Canada, Ireland, the Netherlands, and New Zealand, nurse practitioners have become a major player in the healthcare system (Maier, Barnes, Aiken, & Busse, 2016), while the clinical nurse specialist was one of the first advanced practice nurse (APN) roles to evolve in Asian countries (Pulcini, Jelic, Gul, & Loke, 2010). Many countries have adopted some form of advanced practice nursing.

SUMMARY

APRNs have made significant contributions to quality healthcare, particularly for vulnerable populations. If all Americans are to receive quality, cost-effective healthcare, it is critical that greater use be made of APRNs. Their advanced knowledge and skills, both in nursing and related fields, make valuable contributions to the current and future healthcare system, especially in the task of meaningful healthcare reform. As the United States becomes more diverse, APRNs play key roles in providing culturally competent care. They assume leadership in developing new practice sites and innovative systems of care to enhance healthcare outcomes. A bright future awaits nursing and APRNs.

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